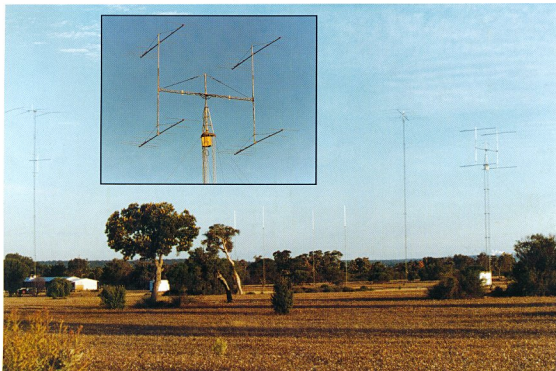


Amateur Radio

May 1997
Volume 65 No 5



Journal of the Wireless Institute of Australia



Full of the latest amateur radio news, information and technical articles including...

- “Nano-L” Inductance Bridge for Small Coils
- Conversion of Philips FM92 E to Six Metres
- Review of the Icom IC-756 HF Transceiver

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Cover

Bill Hosie VK6ACY really does have an antenna "farm". From left to right, a 40 m three element Yagi at 43 m above ground; an 80 m four square array consisting of four quarter wave verticals, each with 48 quarter wave ground radials; a six element 20 m Yagi at 43 m high; and a four by seven element stack for 6 m at 80 feet high. Inset is a close-up of the impressive 6 m array. (Photos by Bill VK6ACY)

BACK ISSUES

Available, only until stocks are exhausted, at \$4.00 each (including postage within Australia) to members.

PHOTOSTAT COPIES

When back issues are no longer available, photocopies of articles are available to members at \$2.50 each (plus \$2.00 for each additional issue in which the article appears).

The opinions expressed in this publication do not necessarily reflect the official view of the WIA, and the WIA cannot be held responsible for incorrect information published.

Amateur Radio Service

A radiocommunication service for the purpose of self-training, intercommunication and technical investigation carried out by amateurs, that is, by duly authorised persons interested in radio technique solely with a personal aim and without pecuniary interest.

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Editor's Comment

The Convention

Every year in May, the WIA holds its Federal Convention. This is the meeting, attended by all the Federal Councillors (at least one from each Division), at which the office-bearers are selected for the next 12 months. Office-bearers are people such as the President, the Directors and all the Federal Co-ordinators, including the Editor.

This year the Convention is to be on the weekend of 3 and 4 May, so by the time you read this it will probably be over. Whether any appointments are changed will have been decided by the votes of the seven Divisions, one vote from each Division, even though a Division may be represented by one or two Alternate Councillors and/or observers, as well as the regular Councillor.

In their turn each of these Councillors has been elected by his/her Divisional Council to act as their Division's Federal representative. And, in their turn, the Divisional Councillors have been elected by you, the members of the Divisions. So there is a certain amount of democracy in the system, although some may think there is scope for improvement.

Until 1988 there was only one Federal Convention each year, and it met usually in Melbourne. But, in 1988, the Executive (as it was then designated) was expanded to include several members from other states, in addition to the Federal Councillors from each state. The function of Executive being to provide continuous management control necessitated that it should meet, as a rule, monthly. This involved additional costs in bringing interstate members to Melbourne, so a compromise was struck that Council and Executive meet quarterly at three Extraordinary Federal Conventions as well as the May Federal Convention.

More recently, to reduce costs, the relatively large Executive was disbanded and, after a period in which Council and Executive functions were combined, further change introduced the four-person Executive we now have. As you see, the system by which the Federal WIA is managed has undergone considerable change over the years, and even now only a super-optimist would describe it as perfect!

But through all these changes, the annual Federal Convention still survives. Long may it continue to keep amateur radio alive in Australia!

Bill Rice VK3ABP
Editor

CONTRIBUTIONS TO AMATEUR RADIO

Amateur Radio is a forum for WIA members' amateur radio technical experiments, experiences, opinions and news. Manuscripts with drawings and/or photos are always welcome and will be considered for possible publication. Articles on computer disk or via e-mail are especially welcome. The WIA cannot assume responsibility for loss or damage to any material. A pamphlet, "How to Write for Amateur Radio", is available from vk3br Communications Pty Ltd on receipt of a stamped, self addressed envelope.

■ WIA News

Roger Harrison VK2ZRH, Federal Media Liaison Officer

Public Comment on Update Proposal for Short Range Class Licence Applications Sought by SMA

At the end of March, the Spectrum Management Agency (SMA) issued a release seeking public comment on a proposal to update the current Class Licence for Low Interference Potential Devices.

The SMA cited growing community demand for these radio devices for short range applications. The SMA said, "The proposed updates to the class licence are intended to support greater opportunities for electronic article surveillance devices, underground communication systems, electronic tolling systems, alarm transmitters, radio-determination transmitters, and various devices operating in the frequency ranges 0 to 9 kHz and 433.05 to 434.79 MHz."

The SMA offered a package of information, including a background paper explaining the nature of the updates. The WIA's SMA Liaison Team requested copies in early April. The closing date for comment was 2 May 1997.

As its chairman, Federal President Neil Penfold asked the WIA SMA Liaison Team to draft a response, working in conjunction with Federal Technical Advisory Committee (FeTAC) chairman John Martin VK3KWA. The draft was to draw on the material previously sent to the SMA earlier this year in response to a query regarding the subject of low power devices sharing the 433.05-434.79 MHz

segment of the 70 cm amateur band (see WIA News, page 5 in the March issue).

Apart from possible interference to these devices from amateur transmission, there is potential for interference from the devices to individual amateur stations, as well as repeater systems which operate in the 433-434.8 MHz segment of the 70 cm band.

Problems were experienced in the UK last year with radio activated key entry (RAKE) devices for motor vehicles which operated on 433.92 MHz. People had been locked out of their cars because strong UHF transmissions from amateur, land mobile and military stations had blocked the radio keys, which employ simple tuned radio frequency (TRF) receivers (see WIA News, January 1997, p 6). Also, in January this year, interference complaints regarding "wireless" hi-fi headphones and loudspeaker systems operating on 433 MHz were in the news in Britain.

Amateurs are a secondary service in the 420-450 MHz band, sharing it with radio-location systems and the military.

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Australia's First Spectrum Auction Raises \$1m

Two 4 MHz blocks of spectrum at 500 MHz went up for auction in February, closing in late March with a total of \$1.03 million in bids for spectrum licences being received by the Spectrum Management Agency (SMA). This is the first time fully trade-able spectrum licences have been allocated in Australia.

The two bands are at 501-505 MHz and 511-515 MHz. For the licence auction they were divided into a range of bandwidths, from 12.5 kHz to 1 MHz, both bands being available for licensing in 17 geographical areas across Australia. Some 900 separate licence "lots" were put up for auction. Successful bidders will receive a 15-year spectrum licence. Licensees are able to determine the use of the spectrum within their allocated band or bands, and geographical regions, set by the core conditions of the spectrum licence. Licensees will be able to trade the licences, as well as sub-let channels or bands in any or all geographical areas covered by the spectrum licence.

A rating unit scheme yielded data on lot prices obtained in the auction process, which employed a "simultaneous ascending auction" system, with

multiple rounds of bids progressing until there were no further bids on the lots offered. The average price per lot for all markets was 76 cents, with Northern Queensland regions attracting the most market interest and the highest bids. Lots in the Townsville region rated an average price of \$7.14 per lot unit, with Mackay coming in at \$3.77, followed by Darwin at \$3.12 and Adelaide at \$2.53, according to the SMA. Sydney lots achieved average prices per lot rating unit of 56 cents, and Melbourne somewhat behind at 45 cents.

The biggest bidder was the newly-

formed private mobile radiocommunications specialist company, Simoco Pacific (based out of Melbourne), part of the British-headquartered multinational Simoco group, formed from the old Philips Private Mobile Telecommunications division last year.

Meanwhile, in the United States, the two top bidders in the Federal Communications Commission's auctions of wireless mobile phone licences, which raised a total of \$US10.2 billion, have asked for easier payment terms.

NextWave Telecom, who bid a total of \$US4.7 billion, and Pocket Communications, whose bids added up to \$US1.4 billion, for a series of UHF-band licences, have asked for leniency from the regulators on the terms of payment. Effectively, their bids have become loans from the government. "What next, spectrum lay-bys?", asked one industry commentator.

The Licensing Submission: What Next?

When the WIA's submission on amateur licensing was presented to the Minister for Communications and the Arts, Senator Richard Alston, in February, the Minister referred it to his department to be considered in a review of the Radiocommunications Act and amendments.

The WIA has learned from the Minister's office that that review will definitely be conducted this year. The Department are still settling the terms of reference for the review, the WIA was told, and the Radiocommunications Consultative Council (RCC) will be notified in due course.

The WIA is represented on the (RCC) by David Wardlaw VK3ADW.

The Radiocommunications Amendment Act passed through the Senate along with the series of Telecommunications Act amendments and related other bills during parliamentary sittings between 17 and 24 March.

Changes at the SMA

The Spectrum Manager, Christine Goode, has departed the Spectrum Management Agency to take up a position with the Commonwealth Superannuation Board. Senior SMA officer, Roger Smith is the acting Spectrum Manager.

The change came in preparation for the establishment of the Australian Communications Authority, which has been created by an act of Parliament and will commence operation from 1 July 1997. It will succeed and take over the combined roles of the Spectrum Management Agency and the telecommunications regulator, Austel.

The head of Austel, Neil Tuckwell, has moved to the Australian Competition and Consumer Commission (ACCC), working under contract as a consultant.

Late SMA News

The WIA has been notified by the SMA that the Radiocommunications Licence Conditions (Amateur Licence) have been gazetted.

All WIA divisions have a copy and it is available from all SMA offices and also on their Internet home page www.sma.gov.au

It is expected that, in the near future, all Regulations Examinations will be based on this document.

Further information next month.

February's Recruitment Prize Winner

Mr J W Oswald VK2BOJ, a member of the NSW Division, is the lucky winner of the second Fluke 12B digital multimeter, the prize in the WIA's 1997 recruitment campaign. Mr Oswald's name was drawn from a field of 22 members who joined a Division in February.

Each month throughout 1997, a Fluke 12B digital multimeter, worth \$195, will be given away to a lucky winner who joined a WIA Division in the previous month. The Fluke multimeter prizes have been generously donated by Philips Test & Measurement.

The Fluke 12B measures ac and dc voltage (with auto-selection above 4.5 V), and resistance and capacitance from 1000 pF to 1000 µF. The instrument features a simple rotary dial, a 4000-count liquid crystal display, and diode

and continuity testing. Its "continuity capture" feature indicates intermittent open and short circuits. It comes with test leads and a two-year warranty. Fluke is the world's pre-eminent manufacturer of digital test instruments and the Model 12B is from their recently-released range of hand-held instruments.

Every newcomer to electronics and amateur radio needs a good multimeter, and every seasoned enthusiast could always do with another one!

Membership recruitment advertisements appear in each issue of *Amateur Radio* magazine, and in *Radio and Communications* magazine.

Membership recruitment and renewal advertisements are now appearing on WIA Divisions' World Wide Web pages on the Internet.

International Forum on Digital Communications

Interested in digital radio communications? The 1997 American Radio Relay League and Tucson Amateur packet Radio Digital Communications Conference will be held over 10-12 October, in Baltimore, Maryland in the USA. The conference venue will be located minutes from the BWI airport, between Washington DC and Baltimore, according to the ARRL.

The Digital Communications Conference is an international forum for radio amateurs interested in digital communications, networking and related technologies. Coverage includes HF/VHF/UHF digi-modes, APRS,

spread spectrum, DSP and other modes. The forum is a place to meet other amateurs with like interests, publish your work and present new ideas and techniques for discussion.

Two \$US500 conference travel awards are offered for papers from students. Student papers have to be with the organisers by 30 June. Deadline for general conference papers is 22 August.

Full details can be found on the Web at www.arrl.org/announce/dcc97.html, or tapr.org/dcc. Or, write to: Tucson Amateur Packet Radio Corp, 8987-309 E Tanque Verde Rd #337, Tucson, Arizona 85749-9399 USA.

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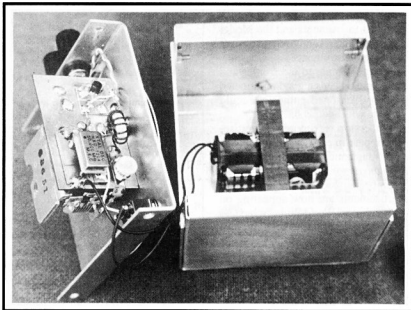
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■ Test Equipment

"Nano-L" Inductance Bridge for Small Coils

Drew Diamond VK3XU tells us how to build a very useful piece of test equipment.*



Inside view of the Nano-L Inductance Bridge.

Some experimenters may have trouble in measuring small values of inductance, even when employing a suitable dipper and the "resonance dip" method. Indeed, more than a few of the fancy "laboratory" bridges will not go much below 5 mH. Recent VHF work involving coils and loops of only a few hundred nH caused me to think about a simple, handy little meter for measuring inductors below 500 nH (or 0.5 mH, the lower calibrated limit of my "Little-L"). Here is one simple approach to the problem. The measuring range is from less than 50 nH to 500 nH (0.05 mH to 0.5 mH), which should cover most tank and filter coil requirements encountered by workers in the VHF field.

Circuit

A standard 50 MHz computer crystal oscillator clock module generates our

test signal. 50 MHz was chosen for several reasons; it is a stock frequency, the price is reasonable, the coil under test is "excited" by an appropriate frequency (and therefore gives a better idea as to its "Q-ness"), and the signal makes a handy frequency calibration source/band edge marker for six metre work (more later).

To avoid measurement errors, a 50 MHz tank at L1 removes harmonic energy from the TTL output, and thus supplies a near sinusoidal signal to the unknown terminals at LX. When the coil under test is resonated by the variable capacitor, the voltage at the "hot" terminal will be at a maximum, sufficient to cause the germanium diodes to conduct. A small proportional detected DC will be injected into the base of the 2N3904, turning the transistor on, thus causing the LED to glow. After careful

peaking of the variable capacitor, the value may be read from the calibrated dial. About 25 mA is drawn from the 6 V supply comprised of 4 x 1.5 V penlight cells.

Construction

As some items are best left "un-meticated", I offer apologies in advance for mixing metric and Imperial measurements in what follows. To reduce unwanted stray capacitance (which would reduce the measuring range, and cause errors), some of the wiring is "direct". The clock module, filter tank and detector components are accommodated upon a plain circuit board using paddyboard construction. A suggested layout is shown, although component placement is not especially critical, provided that all RF carrying leads are as short as reasonably practicable.

The 210 pF (max) variable capacitor used is one section of a locally-made dual gang 8 to 95 pF/8 to 210 pF unit, available from at least one supplier, although any gang of about 200 or 400 pF maximum C, and 8 or 10 pF minimum, will do. Wiring lead lengths are reduced by using tag 1 and tag 2 of the capacitor as shown in the drawings.

The instrument should be housed in an aluminium or die-cast box. That shown is home-made, but is similar to the Horwood 34/4/DS measuring 100 x 100 x 75 mm. If the 95/210 pF capacitor is used (see Parts), the calibrated dial scale shown should give quite reasonable accuracy (more on calibration later).

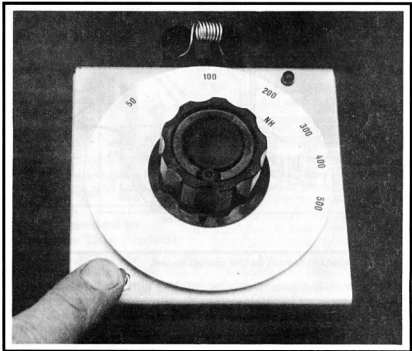
Operationally, the LED forms the "cursor", or pointer, by aligning it with the calibrated scale. The variable capacitor is mounted so that its spindle is centred in the panel. Make sure that the three 4 BA CSK fixing screws do not foul the plates. Use spacers (or washers) on the screws, between capacitor and panel, and/or cut the screws to length if necessary.

Here's a dodge for easier marking-out for the capacitor mounting holes. Drill a 1/4" hole in the exact centre of the panel for the capacitor spindle. Obtain three off-cuts from 4 BA steel screws, about 15 mm length (perhaps from your three mounting screws). Fix these in the chuck of your drill, lathe fashion. Form a

conical point on the cut end of each screw by applying a file to the rotating work-piece. Insert these three stud screws into the front capacitor mounting holes, points facing out. Now insert the capacitor spindle squarely through the 0.25" hole from inside the box so that the side of the capacitor faces the spot where the LX terminal set shall be. Apply a firm pressure to the studs, thus accurately marking where the mounting holes are required.

The crystal module is soldered to a small substrate board which, in turn, is soldered or glued to the main board. A small four-square substrate accommodates the detector components. Winding details for the tank coil L1 are shown on the circuit. Use an Amidon T50-6 (yellow) core for L1. The tank trimming capacitor may be an ordinary Philips 22 pF (green). When mounting the trim cap on to the board, observe that the tag which connects to the screwdriver slot is the one soldered to the circuit board foil. Preset to about half capacitance.

The dial shown was made from sheet aluminium, about 1.3 mm thickness, and about 100 mm diameter. Scribe the 50 mm radius with a compass. Cut out slightly oversize with a rod saw (Abrafile



The dial assembly.

[TM]). Drill a 1/4" hole in the centre. Fit a 1/4" bolt and nut through the hole. If you have access to a lathe, fix the assembly in a three-jaw and turn to 100 mm od. Otherwise, fix the assembly in

the chuck of a power drill which is mounted in your bench vice, and apply a file to the rotating outer edge of the disc.

Carefully work to a smooth finish. Find a suitable knob, and drill three

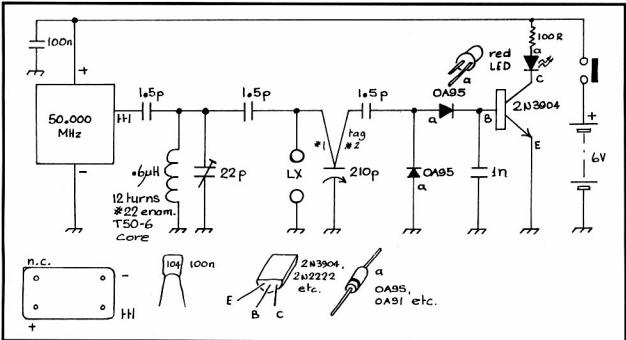


Fig 1 - Circuit diagram of the Nano-L Inductance Bridge.

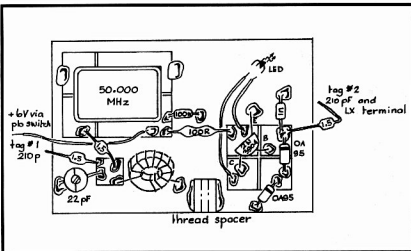


Fig 2 - Component layout on the circuit board.

equally spaced (120 degrees apart) holes in the rear to correspond with three holes in the disc. Use CSK screws to join these parts. Before assembly, paint the disc with white undercoat, ready to receive your calibrations.

Calibration and Operation

Shown is a set of test coils for calibrating the dial. The 50, 100, 200 and 300 nH coils are made from #18 B&S (1 mm) tinned or enamelled copper wire, wound upon the shank of a 6.5 mm

(0.25") drill, spaced about one wire diameter between turns. Or, preferably, you can use an ordinary 5/16" Wh 18 tpi bolt. Wind the turns on, then unscrew the bolt from the coil. The 400 and 500 nH coils were wound upon the shank a 13 mm (0.5") drill, one wire diameter between turns, but this time, to avoid shorted turns, use #18 B&S enamelled wire.

Start by fixing the 300 nH coil in the LX terminals. Move the dial around the half capacitance point so that the LED glows. Peak the 22 pF trim cap across L1

for maximum glow. Now mark the dial for the remaining calibration points using the appropriate coil, peaking the LED glow for each one.

The 50 MHz clock makes a handy 6 m band edge identifier and signal source for receiver work. By switching the device on, with a test coil (or hairpin loop - about 200 mm) resonated, signal strength is controllable by simply placing the bridge some distance from the antenna - ideal for "equivalent" sub-microvolt tests where no calibrated generator is available. Similarly, it is also useful as a remote signal source in checking antenna characteristics.

Parts

The 95/210 pF variable capacitor is available (at the time of writing) from Truscotts Electronic World, (03) 9 723 3860. My 50 MHz crystal module was purchased from Rod Irving Electronics. See Hamads for Amidon suppliers. The remaining components should be available from the mainstream electronic parts suppliers. Drop me a line, at the address below, if you have trouble in locating any of the parts, or in making your model work satisfactorily (SASE please).

References and Further Reading

1. *Easy to Build Inductance Meter - Marriner, W6XM, Ham Radio (USA) Apr '82.*
2. *"Little-L" Inductance Bridge for RF Coils - Diamond, Amateur Radio Nov '92.*
3. *VHF-UHF Manual - Jessop, RSGB.*
4. *Test Equipment For the Radio Amateur - Smith, RSGB.*

*45 Gatters Road, Winga Park VIC 3115
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TEST AND CALIBRATION COILS

50 nH: 2 turns #18 B&S (1 mm) tinned or enamel Cu wire, spaced 1 mm between turns, 6.5 mm id.

100 nH: 4 turns #18 B&S tinned or enamel Cu wire, spaced 1 mm between turns, 6.5 mm id.

200 nH: 7 turns #18 B&S tinned or enamel Cu wire, spaced 1 mm between turns, 6.5 mm id.

300 nH: 10 turns #18 B&S tinned or enamel Cu wire spaced 1 mm between turns, 6.5 mm id.

400 nH: 6 turns #18 B&S enamel Cu wire, spaced 1 mm between turns, 13 mm id.

500 nH: 7 turns #18 B&S enamel Cu wire, spaced 1 mm between turns, 13 mm id.

For 50 - 300 nH; use a 5/16" Wh 18 tpi. bolt as a winding guide.

**Help stamp out
stolen equipment
- keep a record
of all your
equipment serial
numbers in a
safe place.**

■ Transceiver Modifications

Conversion of Philips FM92 E Band to Six Metres

Sponsored by Northern Corridor Radio Group Inc VK6ANC. We acknowledge VK6ZTJ Trevor Sorensen of Tambellup for his work on the original prototype and Phil Jamieson VK6ZPP for support.*

Disclaimer

The authors and the NCRG Inc have taken all care in the preparation of this article. They do NOT accept liability howsoever caused by any person or group of people who, having attempted this project, are unable to successfully complete it through any cause. This project is presented in good faith and all assistance will be rendered to written or faxed queries in an attempt to assist those who may require help.

Introduction

Firstly, this has turned out to be a challenging project that can be achieved cheaply. Philips FM92 sets have been around for about 15 years and have proved reliable in commercial service. Although they range right up to UHF, this conversion is only meant for the E band (Original frequency around 70 MHz) sets. It covers both local and remote mounted sets in both IF versions (10.7 & 21.4, Mark 1 & 2).

Whilst the conversion means having to undertake major surgery, some of the finer mods have not been done due to limited test facilities. Your constructive input and suggestions are most welcome. This project will take around 12 hours to complete. Patience and gentle handling is required. Depending upon options within your set, scanning of two blocks of 10 frequencies each, CTCSS, Selcall and tone burst can be programmed into the EPROM. The frequency range is 52.025 to 53.975 MHz at 25 kHz spacing with adjustable power levels up to 30 watts. Sensitivity is 0.3 to 0.4 μ v at either end of the band.

What's Needed to Complete This Project

1. A fine tip VERY "Hot" soldering iron. We used a mini Scope iron. It needs to be able to supply adequate heat to allow penetration through the circuit boards because, if desoldering is prolonged, horrendous damage to tracks and substrates will take hours to repair (if you can) and raise your blood pressure unacceptably.
2. A good solder sucker is recommended – a Scope SR27 was used with good results.
3. A multi-meter, digital or analogue.
4. A six metre signal source capable of 52.5 to 53.00 MHz with a variable output level down to -100 dBm will ensure the best setting of the receiver's "front end".
5. A frequency counter (optional).
6. A dummy load rated at 30 watts continuous.
7. A VSWR/Power meter rated to 30 watts.
8. A tuning tool set, with a ceramic tip if possible which comes in handy for VCO tuning due to lack of inductance producing properties.
9. Lack of aggression and distractions. VERY IMPORTANT and strongly recommended!
10. Components, winding wire, nail varnish (colour unimportant) and the usual hand tools that most amateurs have in the shack.

How To Do It

Firstly, ensure that your FM92 works; connect it up and see that it transmits and receives. If you are offered two sets,

make sure that they are identical models. Confirm the IFs and if they are Mark 1 or 2. Sets can be had for as little as \$20 each. Look to Government utilities, bush fire boards, councils and the rural commercial business scene as possibilities. (NCRG Inc may also be able to help you – please fax us for current stock or details).

Remove both covers, and locate and remove the 2764 EPROM from beneath the large metal shield on the front left hand corner of the CPU board. The shield is held in place by four screws. Send the EPROM to NCRG Inc for programming, and be sure to nominate the radio type, local or remote, and type of IF filter (21f15c = 21.4 MHz or 10f15c = 10.7 MHz). If you have CTCSS/Selcall/tone burst fitted, then nominate the frequencies which require these features. We will program an EPROM for 62 channels total and any combination of channel mix in two blocks of 10 channels each for scans. This covers the entire FM simplex and repeater portions of the six metre band! A printed sheet will be supplied to illustrate the programmed sequence. Program cost is \$10 plus return postage (\$20 total if we supply and program the EPROM).

NOTE

NCRG Inc has obtained written permission from Philips to modify the FM92s and provide the eproms for this project. YOU MUST ensure that the exterior of the radio is marked to reflect the modified status of these sets should they ever find their way to non amateur usage or ownership. This protects US and YOU against prosecution!!!

Carefully remove the screws holding down the VCO block and front end receiver modules. Desolder the pins. The VCO is at the front left hand corner of the receiver board and the front end block is toward the middle at the front; you can't miss them! Remove the side shields from both modules (VCO has one cover – the front end has two). Care is required; they should just pop off with careful leverage.

Front End Module

Desolder the coil taps on the circuit board (opposite sides of coil) and ground connections from the module top. DO NOT remove the board from the module block. Move all slugs to the coil centres.

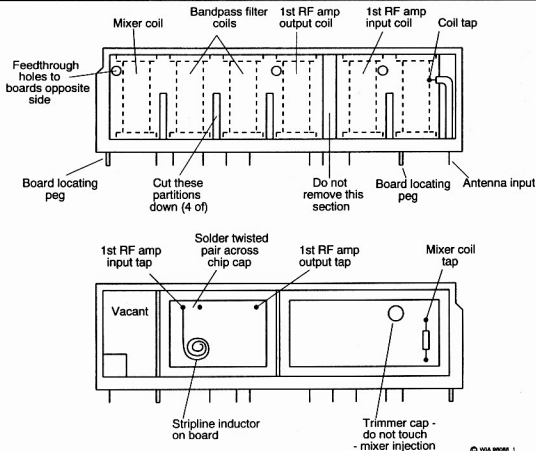


Figure 1(a) - Receiver front end - mixer module. Drawings not to scale. Re-sleeve all tap tails with existing tubing to prevent shorting to earth.

Remove the coils by gently levering them out with a small flat-blade screwdriver. Place them IN ORDER of removal on the bench. GENTLY lever off the end stopper of each coil former noting the exact position of the tap to the earthed end of the coil AND the number of turns before the earthed end. Rewind the coils as per the chart with the SAME size wire and in the SAME direction as they were originally wound (BUT with the additional turns added as shown).

An easy way to wind the coils is to move the slug half way out and refit the end. Hold the coil with long nose pliers between the slug and the top edge of the square end. Wind the earth tail and tap, then move as evenly as possible over the bobbin space for the remaining 50 - 52 turns. It takes practice, BE patient and have a break between coils. You will notice that two coils have NO tap, these

are the band pass filters. Ensure that EACH coil is wound in the SAME direction to avoid insensitivity or receiver malfunction.

Cut the vertical shields from within the block to 2 mm from bottom. If this is not done then the mutual coupling interaction between the coils will be half shielded causing receiver insensitivity. Ensure ALL edges are cleaned off. You can use side cutters to remove the bulk of the shields and a small engraver, if available, to "grind" to a smooth finish. DO NOT remove the thick divider toward the end of the block.

Rewind coils as per Table 1 if L122 and L114 are wound together with a common tap. If these are separate coils, then the following measurements apply: L122 - 3 1/2 turns, L114 - 6 1/2 turns.

A general observation is that all coils have 25 - 30% more turns than originally

manufactured by Philips (ONLY for the majority of the coil, the tap to ground remains the SAME)

Refit the coils and solder the taps and earth tails back in place. Cut two 30 mm lengths of 0.125 mm winding wire and twist them together, open at both ends. Twist and tin one end, then solder this across the input chip capacitor at the tap point of the first RF amp input coil. This is done to raise the input capacitance by only a few picofarad due to the much lower input frequency. Changing the chip cap is not worth the trouble!

Wind the twisted pair in a small circle and coat the open ends with nail varnish to prevent shorting. Push it down into the corner of the board below the level of the shield. Refit the shields by soldering them on. A useful tip is that we used a standard Scope iron with a chisel point. Fit the module back into the radio.

Table 1

Coil	Turns	Wire Size
L101	3.5	0.63
L103	3.5	mm
L104	3.5	0.63
L105	1.0	mm
L106		1.00
L108	10.5	mm
L109	3.5	
L110	1.5	
L114	2.5	1.00
L115	1.5	mm
L116	3.5	
L117		
L118	6.5	
L119	6.5	
L120	5.5	1.00
L121	5.5	mm
L122	5.0	0.63
		mm

A low pass filter must be fitted between the VCO buffer and the pre-driver for the PA. The existing buffer filter cannot be altered; it was designed to work above 130 MHz and is useless for our second harmonic suppression at 52 – 54 MHz. The components are mounted directly on the unused circuit pads thoughtfully provided between the buffer filter and the receiver block! We decided to use a design from the ARRL handbook.

Buffer Output Filter

Filter No 26 (see Fig 1(b))

FCO = 52 MHz, $F_{sub} = 57.5$ MHz, $F_{AS} = 90.1$ MHz, $F_2 = 145.0$ MHz, $F_4 = 94.0$ MHz, $A_{sub} = 49$ dB.

C1 = 56 pF, C2 = 6 pF, C3 = 100 pF, C4 = 17 pF, C5 = 47 pF

L2 = 0.201 μ H, L4 = 0.168 μ H

L2 = 7 turns of 6 mm diameter, 6.5 mm long, using 24g (0.5 mm) wire.

L4 = 6 turns of 6 mm diameter, 5.5 mm long, using 24g (0.5 mm) wire.

Both should be spaced at one wire thickness. Use ground capacitors to support coils.

VCO

To remove the VCO board from the block, use your standard Scope iron by heating the case whilst gently prying the board downwards. Remove both offset and main tuning coils CAREFULLY. These are glued to the board; use long nose pliers, grip the coil and gently rock

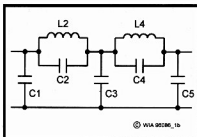


Figure 1(b) – Buffer output filter.

until it lets go. Cut the end off, wind your coil and secure with nail varnish.

If you break the former during removal, salvage another from another old set and use it. Remember to exchange the slugs between the damaged former and your "new" one. If you can't find another set, and you purchased a second radio, now's the time to get one from it for this job! Resolder the block back into the case prior to refit into the radio.

A useful tip. A used 9 volt transistor battery firmly held in a vice with the board resting on it and the case on top prior to applying heat, usually works. You are only soldering this board back into the unit on a couple of raised pillars inside the module. Careful application of heat and pressure on the case to reflow

the solder usually works. Of ALL the faults that occur in FM92s, this one is the hardest to fix as it causes microphonic resonance because the board "floats" within the case causing frequency variation. After cooling, carefully inspect the solder bond within the module. Redo it if you're not satisfied. Refit the VCO and grin BROADLY – you're getting there!!

Power Amplifier (PA) Stage

Unsolder the wiring from the posts, unsolder the co-axes on the board and remove the PA final transistor locknut on the underside. Remove the board fixing screws and then gently remove the board. Desolder and remove the inductor coils. Wind the new coils around twist drill shanks of the same internal coil diameter and space the turns evenly to fit into the same space that they previously occupied. Ensure that all coils are wound in the SAME DIRECTION as the previous units.

Desolder and remove the various capacitors, and substitute capacitors as per Table 2. Note that C122, C123 and C128 are added in parallel with the existing capacitors; and that C127 and

Table 2

Capacitor	Original Value	Fit for 6 m	Preferred value
C101	220 pF	270 pF	270 pF
C102	68 pF	82 pF	82 pF
C107	100 pF	120 pF	120 pF
C108	82 pF	100 pF	100 pF
C111	68 pF	82 pF	82 pF
C112	82 pF	120 pF	120 pF
C117	47 pF	56 pF	56 pF
C118	180 pF	220 pF	220 pF
C119	68 pF	82 pF	82 pF
C120	5.6 pF	leave as is	
C122	330 pF	add 82 pF	82 pF
C123	330 pF	add 82 pF	82 pF
C126	47 pF	56 pF	56 pF
C127	270 pF	add 68 pF beneath	68 pF
C128	250 pF	add 68 pF	68 pF
C130	27 pF	33 pF	33 pF
C135	39 pF	47 pF	47 pF
C136	39 pF	47 pF	47 pF
C139	27 pF	33 pF	33 pF
C140	47 pF	56 pF	56 pF
C141	15 pF	18 pF	18 pF
C142	47 pF	56 pF	56 pF
C143	27 pF	33 pF	33 pF
C144	470 pF	add 120 pF beneath	120 pF

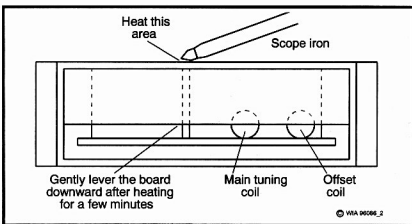


Figure 2 - VCO underside view. Place the VCO block on a stable surface and remember it gets very hot! To replace the board, place it in the same position but use a spacer under the board to keep it firmly against the posts. Re-heat at the same point and observe the solder melt. Do not overheat the block as it will damage the board!

C144 are added in parallel beneath the board. Lay the capacitors flat. Some of the removed capacitors can be re-used if desired. Refit the new/relocated capacitors as close to the board as possible and cut off any excess lead length flush with the board. **ALSO NOTE** there is only a few millimetres clearance on the underside of the board but, with careful placement, some of the flat style capacitors can be mounted here.

Once again, this is a fairly tedious job, so go carefully, check each component prior to fitting and have a break if the stress level freaks you out! Refit the PA board and don't forget the locknut.

Easy Stuff

Remove the 50 k deviation pot and replace with a 100 k. The prototype lacked deviation adjustment and for those who know the circuit, this

increases the loop gain of the exciter. Refit the programmed EPROM to the set and refit the shield.

Tune Up

Connect the speaker, microphone and DC lead, then switch on. Listen to the receiver audio. It should be making intermittent rasping sounds which means that the VCO is out of lock. Move in the Main VCO tuning slug until the rasping sound changes to a normal open-mute noise. Set the mute with the mute control. Connect your multimeter to the test point post at the rear of the VCO, noting that this is **POSITIVE** volts, and the chassis is negative.

Set the multimeter to the 12 volt range, select your **HIGHEST RECEIVE** frequency and move the **MAIN** tuning slug to see **NO MORE** than 12 volts on the meter. Now connect a power meter

and dummy load to the output. Select the **HIGHEST TRANSMIT** frequency, activate PTT and move the **OFFSET** slug to achieve **NO** more than 12 volts at the test point. You should now see some output on your meter. Locate the power trim pot on the PA stage and adjust it for maximum output. **NO** more than 25 watts is available without risk of the final transistor going to "Silicon Heaven" (expensive mistake at \$40 plus the stress of tax and finding a supplier!).

Do not exceed 4.5 amps total consumption from the supply. Adjust the **OUTPUT** trim capacitor and power pot to optimise output and minimise total DC supply current. Now manually scan through the channels whilst noting that the multimeter **NEVER** exceeds 12 volts; optimise both the Main and Offset coil slugs to achieve this state.

Receiver Tuning

Set the signal generator to 53.00 MHz. Move all the slugs in the receiver block to mid point. Connect your multimeter to point "S" (test point 201, in line with the VCO block and next to the 9 pin IC). There should be two to eight volts DC on this point. Open the mute, and move slugs until a tone is heard. Monitor the voltmeter and adjust the slugs until maximum voltage is obtained. Peak each coil for maximum voltage on the meter. Reduce the signal input (or find a weak signal) and retune for maximum reading.

Output Harmonics

A word of caution. Although the output filter meets minimum rejection standards, it has been found that ground or shot noise from the VCO can cause grief on Channel 2 TV receivers. If this is a problem, check your own TV first and then carry out **ALL** the requirements of the regulations to minimise or eliminate TVI. If anyone wishes to do some additional experimenting with filters and wants to pass their experience back to us, then we will endeavour to produce regular updates with your contributions acknowledged.

Well, that's about it! You now have a good, portable synthesised radio working on six FM for under \$100 and your knowledge **AND** patience have been increased immeasurably!

*PO Box 244, North Beach WA 6020
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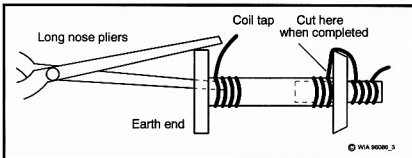
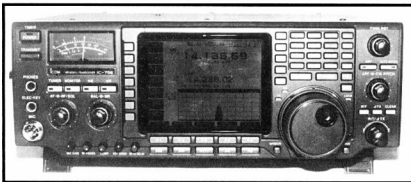


Figure 3 - Hold the coil former as shown, at the square end, with the slug half-way out the other end. Wrap the end of the coil around the slug as shown to hold the end of the coil in place while the varnish is applied then dried. Clip off the wire as close to the end of the former as possible.

■ Equipment Review

The Icom IC-756 All Mode HF & Six Metres Transceiver

Reviewed by Ron Fisher VK3OM*



Icom IC-756 transceiver.

As the Icom advertisements say, "For the Ham who's always wanted an IC-781". You remember the IC-781, of course. It was the big Icom with the CRT display in the middle of the front panel. It also had a BIG price tag to go with it. I believe that it is, in fact, still available at around \$15,000 (on special order only). Stand back a few metres and you might almost mistake the new IC-756 for a 781. However, at a retail price of \$3,700, you will certainly find the IC-756 more affordable.

This price tag puts the new Icom into direct competition with a wide range of transceivers from the other two manufacturers of the big three. But perhaps the main one it will compete against is the Yaesu FT-1000MP at just \$250 more, which includes a built-in AC power supply but not the six metre coverage of the IC-756.

Features and Facilities

The IC-756 incorporates just about everything you would expect to find in a top-line transceiver. The one exception is a built-in AC power supply. There is no provision at all for a self-contained power supply and just no room to fit it in

with the existing physical design. The transceiver requires a standard 13.8 volt 20 amp power source which is connected via a standard 6 pin DC plug.

The IC-756 transmits and receives all modes. These are SSB, CW, AM, FM and RTTY. The frequency coverage on receive is 30 kHz to 60 MHz continuous, with transmissions restricted to the various amateur bands. Tuning is in either one Hz or ten Hz steps, selectable in one, five, nine or ten kHz segments. Each amateur band has direct access with a dedicated button. In addition, you can enter any frequency directly from the keyboard.

The IC-756 has a Dual Watch feature which allows the reception of two different frequencies within any one amateur band. There is only one tuning control but this can be assigned to either receiver. Without doubt the most dominant feature is the display. I will look later at the extraordinary range of facilities that it has, but firstly a description of the display itself.

It is an LCD, but uses a dot matrix system to build up the information. It measures 110 mm wide and 83 mm high

and looks quite different to the LCDs we have become used to in amateur equipment. In fact, it looks very similar to the display on my dedicated word processor.

The background colour is a silvery white with purple characters. Both the brightness and contrast are adjustable via the menu system. After initial switch-on, the display takes a few minutes to come up to normal brightness. Back to the display later and on with the numerous features of this exceptional transceiver.

When you think of new HF transceivers these days, you naturally expect some form of digital signal processing. The IC-756 has both transmit and receive DSP. On receive there is adjustable noise reduction, an automatic notch filter for use on SSB, and an audio peak filter for CW operators.

Transmitted SSB audio has very comprehensive low and high response tailoring. Both ends are adjustable +/-12 dB to produce almost any required sound. The DSP operates, as usual, at a very low frequency IF of 15.625 kHz. There are twin pass-band-tuning controls which allow the operator to adjust both sides of the selectivity curve independently.

One of the important features of the 756 is the solid construction. The transceiver is built into a specially designed diecast frame. It is divided into compartments to both improve the shielding and the rigidity of the whole assembly. The construction is reflected in the weight, which is a solid 10.5 kg. The overall size is slightly larger than the average transceiver in the class, being 340 mm wide, 111 mm high and 285 mm deep.

The front feet are a new design. They flip down to raise the front panel for improved viewing, or flip up if you prefer the flat look. Quite a neat idea.

Again, as expected in mid-priced transceivers, there is a built-in automatic antenna tuner. This is fast acting and has a built-in memory which re-tunes the ATU every 100 kHz after the tuner has been used on a particular band. There are two antenna connectors which can be assigned to any particular band, a very handy feature.

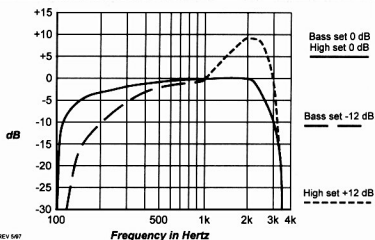


Figure 1 - The Icom IC-756 transmit audio response at 14.2 MHz, no compression, power output 10 watts at 1 kHz reference.

On The Air

To keep everything in the family, I used my old Icom PS-15 power supply to put the IC-756 on the air. No instruction book was available when I first borrowed the transceiver so I had to "fly" it by intuition. However, having had some experience using the IC-706, it proved to be very easy to operate, although I had to wait for a minute or so for the display to come up to normal intensity.

The tuning control is extremely smooth in its action and, with the tuning rate set for one Hz steps, you get 500 Hz per knob revolution. Set the TS button for 10 Hz steps and the tuning rate increases to 5 kHz per knob revolution. For general tuning around you will find the 10 Hz steps ideal but, for sorting out weak signals on a crowded band, the one Hz steps are superb.

Received audio quality on the internal speaker was good, and excellent on my normal external speaker. The same applied to AM reception, except that, with a good external speaker, the quality was the best-ever I have heard from an amateur transceiver.

One of the nice features on the IC-756 is the RF gain/squelch control. Via the menu system it is possible to set this control as an RF gain only, squelch control only, or a combination of both. How, you may ask, can this be done? Simply by using half the travel of the potentiometer for each function. Very neat!

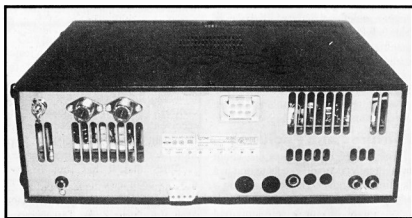
Reports on the transmitted SSB signal were not as encouraging as I expected they might be. As usual, I tried it out on the Travellers Net co-ordinators and got a rather lukewarm response. I used both an Icom handheld microphone and an SM6 desk microphone. In general, the desk microphone was preferred. I finally listened to the transceiver operating from another amateur's shack so I could make a decision myself. My opinion is that it sounds flat and somewhat lifeless. Sure, you can increase both the high and low end of the audio band-pass but this didn't have the effect that I thought it should. The audio was certainly improved with the processor in use but it still didn't have the bite I thought it should have. Maybe the IC-756 is designed to use a microphone with different characteristics to the two that I have. Perhaps one day I might get the chance to try the new SM-20.

The transmitter cooling was very effective. The large fan is mounted a short distance behind the front panel (see photo) and comes on as soon as the transceiver is keyed. It is very quiet in operation.

The meter is clearly illuminated and reads ALC, SWR and power output while in transmit and, of course, S units when receiving. I noted that the power output readings were spot-on. There is, unfortunately, no metering for compression when the speech processor is used. The illumination is adjustable via the menu system.

The amount of information contained in the display is quite amazing. Let's run through a few of them. Take a look at the close-up photo of the display. The top line shows the status of the filters selected for the mode in use for both the 9 MHz and 455 kHz IFs. Next in line is a graphical representation of the twin band-pass filters. Last is a 24 hour clock which can be programmed to switch the transceiver on and off. Down the left hand side is the status of the seven buttons to the left of the display. The top half of the main display area contains the VFO, mode and memory information.

The bottom half is possibly the most interesting section. It switches between several different setting modes but the best one of them all is the "Spectrum Scope". This gives a graphical picture of what is going on over a range of frequencies either side from the centre of tuned frequency. This display can be set



The uncluttered rear panel of the IC-756.

to three different band widths, +/- 12.5, 25 and 50 kHz.

The vertical grid equates to signal strength with each segment equal to 10 dB. It certainly works better than the band scope on my old SM-220.

Other options in this part of the display include memory channel information, which can include frequency and an alphanumeric tag, filter information, selection and level setting for the transmit audio frequency response, monitor and beep level, and display illumination.

The CW operator hasn't been forgotten either. The transceiver has a built-in memory electronic keyer with fully adjustable keying speed and keying weight. Also, the ratio of dot-space-dash can be set to the operator's preference. Again, all the information is displayed on the screen to set these parameters. There is also a range of optional CW filters, although I found that the twin band-pass tuning controls could sharpen the selectivity to the point that would satisfy most casual CW operators.

Finally, a few comments on the operation of the DSP filtering. This has two functions, noise reduction and an automatic notch filter. The notch filter works like magic. Of course, you can only use it on SSB. If you try it on CW it might notch out the signal you want to listen to.

The noise reduction facility has an adjustable threshold and seems to work fairly well, although I found in many cases that the noise blander was superior. However, at times the two together produced better results.

On Test

As usual the first test was for transmit power output and DC current drain.

Band (MHz)	Power Output	Current
1.8	110 W	16 A
3.5	105 W	17 A
7.0	105 W	16 A
10.1	105 W	16 A
14.2	100 W	17.5 A
18.1	100 W	17 A
21.1	100 W	18 A
24.5	100 W	15 A
28.5	95 W	17 A
51.5	100 W	21 A

The above power output was measured in the CW mode with 13.8



The large LCD display set to the Spectrum Scope mode.

volts applied to the transceiver. PEP output when using SSB was exactly the same as the CW output when checked on an oscilloscope. FM power on 29.5 and 52 MHz was the same as the CW output power on those bands. With the RF power control at minimum, the average power on all modes was about 2.5 watts with the current drain at 6 amps.

Next on the list was to estimate the transmitter intermodulation distortion. My tests showed this to be -27 dB compared to 100 watts PEP output at 14.2 MHz. This is a better-than-average result for a 12 volt powered amateur transceiver, but well down on the best I have measured.

Finally, power output was checked with the automatic antenna tuner matching a simulated 3:1 SWR at 14 MHz. The loss measured was about five watts with 100 watts output which is a reasonable figure.

As is often the case, the most interesting test was the overall SSB transmit frequency response measurement. This is a complete about-turn for Icom. The response with the DSP tone control set to zero showed the -6 dB points to be at 140 Hz and 2.6 kHz, with a very smooth curve in between.

Compare this to the test I did on the IC-706, published in the November 1995 issue of *Amateur Radio*. The difference in the low frequency response, in

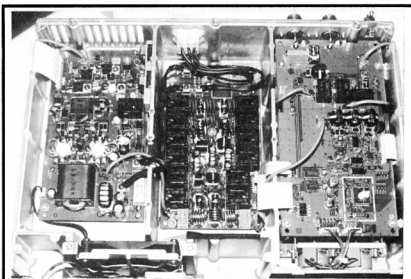
particular, is dramatic. The curves also show the effect of the tone controls. I have only shown the bass cut and the treble boost as I feel these will be the settings most used. At the high end I measured a peak of +9 dB at just above 2 kHz with the response extended to 3.1 kHz for the -6 dB point. The low frequency roll-off with the tone control set to -12 dB is very smooth and gentle with the 6 dB point moved up to about 300 Hz.

My on-air tests were carried out using an ICOM SM-6 desk microphone and an HM-12 hand microphone. No microphone was supplied with the review transceiver. I would certainly like to test the elegant looking SM-20 desk microphone which Icom offer as an option.

Receiver Tests

As usual, the first test was to check the S meter calibration. It was nice to get back to an analogue meter again. For the same incoming signal, it's possible to get several different readings on the S meter. There are three positions of attenuation and two levels of pre-amplification.

The attenuator gives -6, -12 and -18 dB and the pre-amps give +10 dB each, or a total of 20 dB. My basic measurement was taken with both the pre-amps and the attenuator switched off. The figures were taken at 14.2 MHz.



Top view of the IC-756 with the cover removed. Note the large cooling fan to the left immediately behind the front panel.

S Meter Reading	Voltage Input
S1	3.2 μ V
S2	3.8 μ V
S3	4.5 μ V
S4	6.0 μ V
S5	8.0 μ V
S6	12 μ V
S7	19 μ V
S8	30 μ V
S9	54 μ V
S9+10 dB	280 μ V
S9+20 dB	.0015 volt
S9+40 dB	.008 volt
S9+60 dB	.045 volt

With pre-amp one switched in, the S9 figure drops to 18 μ V and, with pre-amp two in, this drops again to 6.1 μ V. Naturally, with the attenuator in, the amount of RF input to produce S9 will rise.

The band to band figures for S9 (pre-amp and attenuator out) were as follows:

Band (MHz)	Signal (μ V)
1.8	49
3.6	50
7.1	45
10.1	56
14.2	54
18.1	54
21.2	61
24.8	74
28.5	72
52.0	80

The S meter reads the same on all modes for a given RF input. Receiver sensitivity was checked at 14.2 MHz. At the time I did this I did not have a copy of the specifications and took the input level as 0.2 μ V. Later, when I did receive an instruction book, I noted that the level should have been 0.16 μ V. However, I don't think the difference is great. I measured the following results.

With pre-amp 2 on - 0.2 μ V 12 dB S/N

With pre-amp 1 on - 0.2 μ V 11 dB S/N

With pre-amp out - 0.2 μ V 10 dB S/N

The sensitivity was very consistent right across the whole range, including six metres.

The receiver audio output was terminated with an eight ohm power meter and a noise and distortion meter with the following results. Maximum audio output was 2.6 watts with 16% distortion. The 10% distortion was at 2.2 watts output which exceeds the specified two watts for this amount of distortion. However, when the audio was reduced to a normal listening level of about 100 milliwatts the distortion did not drop below 2.5%. I am surprised at this high level. I would have expected this to be 1% or less. Although the specification is met, at normal levels this is the highest distortion I have measured for some years. However, I doubt that it will worry you very much unless you are a very critical CW operator.

Maximum audio output required an RF input of 3 μ V or more and the residual noise generated in the audio amplifier was measured at 75 dBm. You won't be troubled with hum or noise if you use headphones.

The received SSB audio response, like the transmitted response, was excellent. Using the 2.8 kHz filter, the 6 dB points were at 200 Hz and 2.8 kHz with very little variation in between. However, the big surprise was the AM audio response. With the full 15 kHz bandwidth selected, the 6 dB points were at 60 Hz and 5 kHz. With a good external speaker connected, broadcast stations sounded as good as my hi-fi system.

The Instruction Manual

Unfortunately, I did not receive the instruction manual until a few days before I completed this review. To add to the problem, when it did come it was only a photo copy and most of the text had been reduced to half-size to save space. On this basis I would rather reserve comments until such time as I see the real thing full size. It appears to be typical Icom and well done. There was no circuit diagram or block diagram included with the copy supplied to me.

Conclusions

The IC-756 certainly has a lot to offer. If you purchase a matching power supply you will be up for a total of around \$4,300. For a little less you can purchase a Yaesu FT-1000MP and the decision to pick the right one would be difficult. For a little more the Kenwood TS-870 could also be a contender but I feel it has been left behind by the newer models. There is a full list of options available to match your new IC-756 including narrow CW filters, narrow SSB filters (1.9 kHz), and even a wide SSB filter of 3.3 kHz. I would like to hear the latter in operation. Like many new transceivers you will have plenty to play with even if the bands are dead.

Our review transceiver was supplied by Daycom Communications Pty Ltd. For more information contact Daycom or Icom Australia Pty Ltd direct.

*24 Sugarloaf Road, Beaconsfield Upper VIC 3808

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Technical Abstracts

Gil Sones VK3AUI*

Simple Iambic Keyer

A simple iambic keyer was described in *RadCom* for March 1997 by Ben Spencer G4YNM. The keyer uses a Programmable Logic Device (PLD) to provide all the logic circuitry required by the keyer. A common CMOS IC is used to provide the keying clock and the sidetone generation, and a common NPN transistor is used to provide the keyed output. Power is obtained from the 12 volt supply using a three terminal regulator.

The circuit of the keyer is shown in Fig 1. The circuit is very simple and all parts, with the exception of the PLD IC2, are common items. The PLD is available from the author. The PLD contains all the logic circuitry.

The author is Ben Spencer G4YNM,

Enterprise House, 33 New King Street, Bath BA1 2BL. If you are interested, an SAE with the means for return Airmail Postage should provide information together with the cost of the PLD.

Bar Graph Readout VHF SWR Meter

A simple direct reading SWR meter using a bar graph LED display was described in February 1997 *QST* by Bill Van Remmen KA2WFJ. The meter uses a sandwich of PCB as the directional coupler and makes use of an LM3914 bar graph driver IC to indicate the SWR.

Forward voltage is applied to the input connected to the internal divider network in the IC. This would normally be connected to a reference voltage. The reflected voltage is connected to the

signal input pin of the IC. The display outputs show the ratio of these voltages which is the VSWR. The internal resistance of the divider chain, together with an external 10 kilohm resistor, limits the maximum indicated VSWR to 3:1.

The circuit is shown in Fig 3. The display can be one of the bargraph LED display arrays or individual LEDs. The 1N34 germanium diodes in the original were selected from a bag of 10 obtained from Radio Shack. In Australia the equivalent supplier would be Tandy. The diodes were selected for near equal forward voltage drop.

The directional coupler construction is shown in Fig 2. The detector loops are thin bare wire. No 30 wire is quoted and the use of wire-wrapping wire with the insulation removed is mentioned. Grooves are scribed between the holes in the PCB to locate the wires in the sandwich during assembly. The two PCBs are glued together with epoxy. The PCB is common 1/16th inch FR4 or G10 glass epoxy board and only needs to be single sided. The 0.22 inch track provides a 50 ohm line.

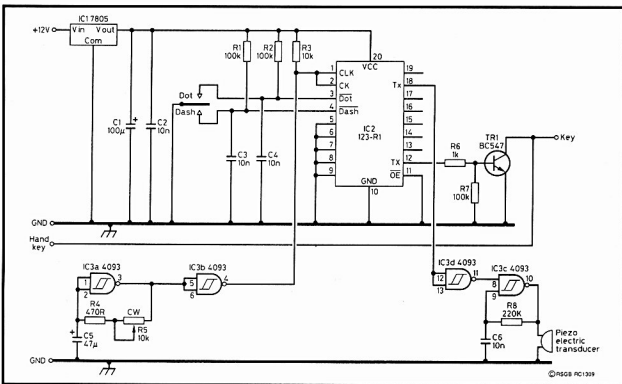


Fig 1 - Simple iambic keyer using PLD.

The loops of wire need to be carefully positioned and the holes through the board for their ends arranged so as not to short them out. Small trim pots are used to terminate the pickup loops at first. These are adjusted for minimum reflected voltage. A matched dummy

load should be used for the setting up tests. The trim pots are then measured and replaced by fixed resistors. In the prototype, pairs of 150 ohm resistors in parallel were used to provide 75 ohm terminations for the pickup lines.

The length of the coupler is up to you;

however, the original would appear to have been about 50 mm long. This is determined by the width of the box used to house the coupler. The box used would appear to have been similar to the locally available plastic Jiffy boxes.

The coaxial connectors were soldered to the sandwich of PCB. In the original, BNC connectors were used. These had to be modified by cutting away part of the metal neck at the rear of the connectors to allow the dielectric to lie flat against the substrate of the ground plane board. The connector is then soldered in position. The modification is shown in Fig 4.

Measuring Internal Resistance of a Meter

A method of measuring the internal resistance of a meter appeared in the *Technical Correspondence* column in December 1996 *QST* which is edited by Paul Nagel N1FB. The item was submitted by Arthur C Erdman W8VWX.

The method uses a digital multimeter as a voltmeter to measure the voltage across the meter when a full scale current is applied. The voltage across a known resistor in series with the meter is also measured. This will allow the internal resistance of the meter to be determined. The current does not need to be that required for full scale but must be flowing through both the meter and the resistor.

The circuit of the test is shown in Fig 5. The variable supply can be any convenient supply and the adjustable resistor R_v is a value which will allow the current through the meter and R_x to be adjusted to a convenient value up to full scale deflection of the meter.

The digital voltmeter (DVM) is used to measure the voltage across the meter internal resistance and across R_x .

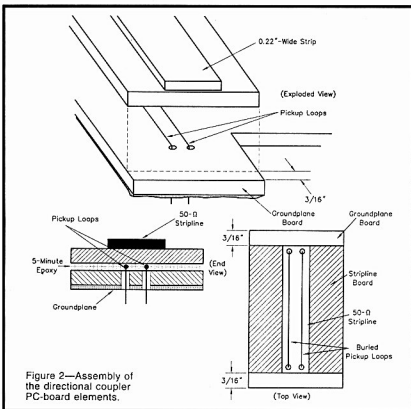


Figure 2—Assembly of the directional coupler PCB-board elements.

Fig 2 - PCB directional coupler.

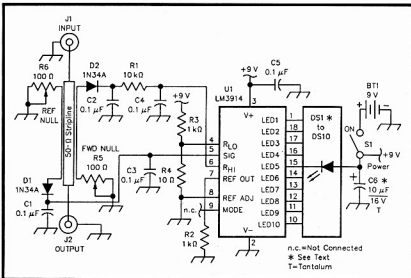


Fig 3 - Circuit of the bar graph VSWR meter.

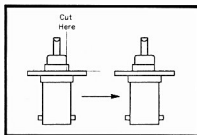


Fig 4 - Modification of BNC connector.

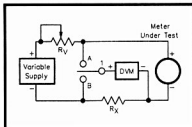


Fig 5 — Using a voltmeter to measure the internal resistance of a meter

The meter internal resistance is calculated by using the formula: $R_{\text{Meter}} = (V_A/V_B) \times R_X$

The DVM should be a battery operated device as a mains operated device may introduce additional complications with earthing. The accuracy of the method is limited by the accuracy to which the value of R_X is known and the accuracy of the DVM. A 1% resistor and one of the common digital multimeters should give a good result.

*C/o PO Box 2175, Caulfield Junction VIC 3161

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WIA News

International Call Book Goes CD-ROM Only

The international and North American radio amateur call books will be published on paper for the last time this year, and become available only on computer CD-ROM from 1998.

Published by Watson-Guptill Publications in the US, the phone book-sized call books have been a tradition in international amateur radio since 1920. The publisher cited "rising cost and increasing demand for electronic publishing" as the reasons for their decision to concentrate on the CD-ROM version. (From the *ARRL Letter Online*).

A subcommittee of the WIA Federal Council is considering options regarding the next *Australian Amateur Radio Call Book*, looking at print and

digital publication of the call sign listings, allied amateur radio information and related issues.

Canadian Amateurs Approach 50,000

The number of amateur radio licensees in Canada totalled 47,745 as of mid-March, according to the national Canadian amateurs' organisation, the Radio Amateurs of Canada (RAC).

The largest number of licensees are in the VE3/VA3 call area of Ontario, there being 16,150. Quebec (VE2/VA2) is the next most-populous region for amateurs, with 11,618 licensees. The Canadian state with the least number of amateurs is the Yukon Territories, with only 87 licensees.



Radio and Communications

INCORPORATING AMATEUR RADIO ACTION and CB ACTION

One of the most talked-about yet misunderstood HF antennas is the cubical quad. This month we guide you through building one, simply. We also look at Icom's new wonderbox, the IC-756...

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May's R&C is serious reading for amateur radio operators. These should keep you busy for ages...

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- Review: Icom IC-756. That screen works! Get IF DSP, 6M and IC-781 performance for under \$4000.
- Build a very compact antenna for 40 and 80 metres — with a big ferrite rod! (Yes, it really works!)
- Review: Kenwood TS-570S. Kenwood's latest HF box to sport 6M, with DSP, ATU and 100W on six!
- 50 Years of 50 Mags. Part Two of the story, narrated by Steve Gregory, VK3OT (VK's first 6M DXCC)
- The best IOTA column in Region 3, three DX columns and more... all the best regulars every month!

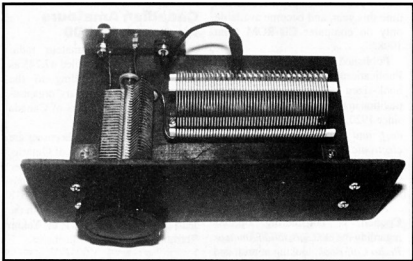
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■ Antennas

Random Radiators

with Ron Cook VK3AFW and Ron Fisher VK3OM*



The simple "L" match ATU.

Yet More on Simple ATUs

Often when writing a column like this, one Ron doesn't always know what the other Ron is thinking up for the next instalment. So, continuing on from last time, here is some more about a simple ATU for all HF band operation.

Might I say that there is nothing new to be presented here, but it did provide an easy solution to a small problem that cropped up with two local amateurs. The first, a Novice wanting to get on 80 metres, and the second heading off on a holiday to Norfolk Island and needing a simple antenna system to get on twenty metres. The solution to both was an "L" match ATU to load up a random length wire antenna. Note, I didn't say a long wire antenna because, in both cases, the length of the antenna probably would not exceed one wavelength for twenty metres and a quarter wave length on eighty metres. A true long wire would be several half waves in length.

The first requirement for the ATU was that it had to be built using bits from the junk box. The cost would be zero. The

photo shows how I did it but there are possibly a hundred ways to build the same thing using bits from your own junk box. There are only two main components, a coil and a variable capacitor. The other items needed are an SO-239 coax socket, a terminal to connect your wire antenna to the ATU, and a chassis or cabinet to build the whole thing into.

Again taking the "use-what-I-have approach", I really got down to basics and used an old wooden power board, a piece of scrap Masonite for the front panel, and a couple of right-angle metal brackets to keep the whole thing rigid.

A few words about the two main components. I was fortunate to find a piece of pre-wound coil stock which made tapping the coil easy. These things are getting hard to find. As an alternative, you can use a piece of plumbers plastic pipe about 50 mm (or two inches) in diameter and about 300 mm (or six inches) long. Wind on twenty turns of 18 gauge copper wire spaced over about 20 mm, then solder a tapping point to each turn so you can clip your tuning tap to it.

Now the tuning capacitor. You will

need to have at least 250 pF with reasonable spacing. A 1950's type broadcast radio tuning capacitor is fine. If you can only find a two gang, which was the most common type, simply wire up one section. Actually these were the capacitors that we used in the original "Z" match described some years ago. You can still find plenty at radio flea-markets

Now a few thoughts on using random wire antennas. One problem that you might encounter is RF feed back. Unfortunately, some transceivers are more susceptible to this than others. However, a few simple precautions will help. Firstly, a good earth is essential with antennas of this type. What, you ask is a good earth? Well, for a random wire antenna, I think that a counterpoise is the best way to go. Just run about 20 metres (not critical) of wire out the window and along the ground in a random fashion. It need not be in a straight line, so run it around the side of the house or along a fence. If you have a wire mesh fence, so much the better.

A good connection to a handy water pipe (metal, of course, not plastic), with a solid piece of wire, can also be effective. The braid from an old piece of RG-8 or RG-213 coaxial cable is an excellent choice. Keep it as short as possible. If you put the two above suggestions together you should have an effective earth system.

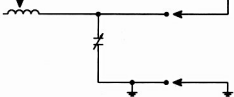
Now to the antenna itself. Some amateurs place great reliance on certain lengths of wire. Perhaps they have something, I'm not sure. I've always found that a length of wire that fits exactly between the ATU and the support at the other end is ideal. Seriously, though, you should have at least a quarter-wave length of wire, which means about 20 metres for 80 metre operation. In actual fact a few metres more this might be better as it helps to avoid a high voltage point at the ATU when you are operating on the higher frequency bands.

Maybe those amateurs who use the W3EDP antenna, which we described in *Random Radiators* a few years ago, have got the length right. To remind you, the W3EDP is 84 feet (or 27 metres) long and uses a counterpoise earth system.

Tuning up the whole thing is very

To transceiver
via SWR meter

Antenna



© WA 8arRad_587

Earth or counterpoise

Circuit diagram of the "L" match ATU. See the text for component values.

easy. You will need an SWR meter, of course, and this should be connected in the usual way between the ATU and the transceiver. Start your tuning by setting the capacitor at maximum and adjust the tap on the coil to give a peak in received noise or signal. Now transmit a small amount of carrier (no more than 10 or 15 watts) and note the SWR. It will probably be high. Move the coil tap up and down a turn at a time until the SWR decreases. Adjust the capacitor for a further reduction in SWR. Repeat the above until the SWR is at a minimum and there you are.

By the way, after a successful trip to Norfolk Island, the ATU is now working well at a local Novice station, mainly on 80 metres.

More on Coaxial Connectors

Our discussion on the problems of terminating coax connectors, a few months ago, brought a response from John Bird VK3BCQ.

"Your reference to problems with terminating coax cables to the standard PL-259 connector was very interesting. I often wonder how many people have

become frustrated in the exercise. I have seen the procedures described many times in various amateur radio publications; it all looks fairly simple until tried.

"One of the problems is that people forget the basics of soldering in that items to be soldered must have both surfaces tinned. Another problem, at least in my experience, is that when many PL-259s are heated to soldering temperature the solder will bead and not flow and tin correctly. This is because the average PL-259 is chrome plated and not silver plated.

"I have found the answer to this is to remove the plating around the soldering holes with a warding file and then use a small amount of "Bakers Fluid" as a tinning flux. Some may frown on this practice, but the connectors can be washed in warm soapy water and dried when clean. I use a very heavy iron at maximum heat to tin the braid and, when the coax is inserted into the connector, the same heavy iron is used to complete the soldering of the four holes. One of those miniature blow torches can also be used.

"Perhaps at some time you could publish an article by the experts on the fine art of terminating coax cables".

Thanks for your thoughts, John. Now, are there any coax experts out there who would like to share their expertise with us?

Well, that's your lot for this month, so it's 73 from him and 73 from me.

The two Rons.

*C/o PO Box 2175, Caulfield Junction, VIC 3161

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■ People

Ham Camp in the Flinders Ranges

Paul Meier VK5MAP tells of a fun weekend.*

During the last weekend in October 1996, a Ham activities camp was held by the Southern Flinders Ranges Appreciation Group at Ippinichie Creek, located just south of Wirrabara, in the Wirrabara Forest. The Group is made up of amateur radio operators who are present or past residents near the Flinders Ranges of South Australia, and others who value the area.

The meeting started well as some members arrived early to set up camp in the evening of 25 October. Those who arrived early had water boiling for late comers, and Friday evening merged into the early hours of Saturday morning as, aided by their favourite drink, everyone chatted around the camp fire. Neville VK5WG was noted as a connoisseur of

port, and others present included Tony VK5WC, Dave VK5ABI with Christene and Christopher, Peter VK5PJT with Maureen, Terry VK5LED, Roger VK5NWE, and Paul VK5MAP with Janet.

Saturday highlights included entertainment with the "Ball Popping Machine", supplied by Roger, and the arrival from Port Pirie of Karen, XYL of VK5LED, with their family. During the morning Neville, Terry and Roger visited the VK5RMN two metre repeater site at The Bluff. This is also the location of towers for the TV transmitters which serve the mid northern area of the state.

In the evening, Roger's request for permission "to stay in the bush for one more night" was granted by his wife. Ian

VK5KKT called on two metres before arriving in time to sample some bush damper which had been prepared and "cooked in the coals" by Neville and Terry.

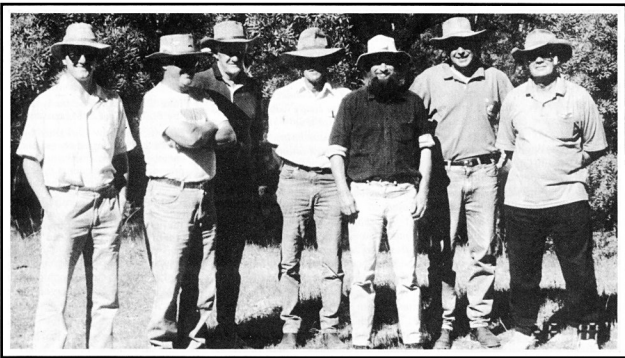
On Sunday morning, with the addition of Leo VK5SO, and his wife Hazel from Port Pirie, everyone set out for The Bluff. The trip was an opportunity for all to view the VK5RMN and television towers, and to see the picturesque landscapes surrounding Spencer's Gulf.

The return to the campsite was followed by an excellent BBQ lunch before packing for the journey home. The enjoyable weekend concluded by giving a special "Thank you" to Karen and Terry, who had supplied tents, bedding and cooking utensils.

All who were present agreed the weekend had been an ideal chance for them to have their first "Eyeball QSO" with other members, and hoped for similar gatherings in the future. All amateurs are welcome to join in with the regular SSB nets held by the group on Monday, Wednesday and Saturday evenings at 8.30 pm CST on 3.605 MHz

**PO Box 76, Peterborough SA 5422*

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(l to r) Dave VK5ABI, Peter VK5PJT, Paul VK5MAP, Roger VK5NWE, Tony VK5WC, Terry VK5LED, Neville VK5WG. Absent were Ian VK5KKT and Leo VK5SO.

■ Membership

Wanted: 100 Members to Replace the Dead!

WIA Demographics Into the Next Century

Peter Parker VK1PK explores the future of WIA membership.*

Introduction

It is generally acknowledged that the amateur population is ageing. Since the heady days of the CB boom two decades ago, the number of people taking up amateur radio has fallen dramatically. With continued low recruiting rates and a population that is ageing several times quicker than Australian society generally, the Amateur Service faces a major challenge even to keep its numbers static.

A falling amateur population means a less active club scene, a declining ability to defend frequency allocations, and a moribund WIA that is less able to advance the interests of its members and amateur radio generally. Signs of the latter are already becoming apparent in some areas.

Making use of ABS and WIA data, this article attempts to gauge the order of magnitude of our demographic decline. Armed with this information, it is up to WIA office bearers, Club officials and individual amateurs to devise means to bring about a reversal in the trends described.

Order of Magnitude

The major problem of a rapidly ageing population is its high mortality rate. Reference to ABS data reveals that once people move beyond their late forties, the probability of them dying (ie their age-specific death rate) rises markedly. With an average age in the fifties, it follows that even a relatively small ageing of the amateur population means a large increase in the annual intake of new amateurs is required to keep our numbers constant. Maintaining our share of the national population would be an even harder (though not insurmountable) task.

A recent WIA survey (Ref 1) revealed the demographics of WIA members.

These were under 50, 27%; 50-70, 48%; and 70+, 25%. The average age of survey respondents was 59. From this point onwards, I will assume that survey respondents are representative of the broader WIA membership.

As explained earlier, our mortality rate will be higher than for the general population, because of our higher average age. This is significant because of the need for an increasing number of new members joining each year just for our membership levels to remain static. This exercise attempts to quantify the amateur mortality rate, and thus the numbers of new members required for us to hold steady. For this reason this paper will be important for any budgeting or forward planning that the Institute may wish to undertake. Two estimates will be produced, each being based on different methods. The emphasis will be on producing estimates for WIA members. However, by assuming that the WIA is a

microcosm of the broader amateur population, multiplying the estimates given by three (roughly two-thirds of amateurs are not WIA members) may provide order of magnitude figures for the total number of VK amateurs who become silent keys.

Estimate One

This is based on a simple survey of the *Silent Key* listings in *Amateur Radio* magazine. The deaths of some 80 amateurs were reported in the twelve months to February 1997. This corresponds to a mortality rate of approximately **16 per thousand** for the WIA member population.

Being based on real figures, this is an absolute bottom limit on the number of WIA members who die each year.

Estimate One: 80 WIA members die each year

Estimate Two

This estimate is more speculative and makes more assumptions than does the first one. It is included here chiefly to demonstrate the effect that a small increase in our average age has on the intake needed to keep our numbers constant.

Reference to the West Australian Year Book (Ref 2) provides mortality data by age group for the Australian population as a whole. It states that the mortality rate for the Australian population as a whole is seven per 1000. That means that seven

WIA MORSE PRACTICE TRANSMISSIONS

VK2BWI	Nightly at 2000 local on 3550 kHz
VK2RCW	Continuous on 3699 kHz and 144.950 MHz 5 wpm, 8 wpm, 12 wpm
VK3COD	Nightly (weekdays) at 1030 UTC on 28.340 MHz and 147.425 MHz
VK3RCW	Continuous on 145.650 MHz, 5 wpm, 10 wpm
VK4WIT	Monday at 0930 UTC on 3535 kHz
VK4WCH	Wednesday at 1000 UTC on 3535 kHz
VK4AV	Thursday at 0930 UTC on 3535 kHz
VK4WIS	Sunday at 0930 UTC on 3535 kHz
VK5AWI	Nightly at 2030 local on 3550 kHz
VK5VF	Continuous on 145.650 MHz, 5 wpm to 12 wpm
VK6RCW	Continuous on 147.375 MHz, 3 wpm to 12 wpm

people per thousand will die in a given year.

To calculate the figures for WIA members I will assume that the mortality rate of a member at a particular age is the same as for a non-amateur of the same age. For ease of calculation I will also assume that there are no amateurs under 20. Because of the broader age groupings in the WIA survey, I will have to assume that amateurs are evenly distributed across each range (which we know is not the case).

The demographic profile of WIA members is: under 50, 27%; 50-70, 48%; 70-84, 20%; and 85+, 5%. Note, that for reasons relating to the ABS data available, I have assumed that five percent of members are aged 85 or over. The ABS figures are in five-year age bands. They are for both men and women. I will combine these bands to make them suit those used in the WIA survey. Mortality rates for the general population (per 1000 in a given year) are as follows:-

Age cohort	Mortality Rate (/1000)
20-49	1.3
50-69	11
70-84	53
85+	156

By multiplying these figures by the proportion of members in each category, and then dividing this by 100, we come up with a weighted figure for WIA membership as a whole.

Thus the total member mortality rate = $(1.3 \times 27 + 11 \times 48 + 53 \times 20 + 156 \times 5) / 100 = 24$ per thousand.

Assuming a WIA membership of 5000 amateurs, 120 would die in a given year. Note that this estimate is 50 percent higher than Estimate One.

Estimate Two: 120 WIA members die each year

A number of factors influence the accuracy of this estimate. The ABS figures are for both males and females. Amateurs are predominantly male. Males have shorter life expectancies and higher mortality rates than females. Thus even the figure of 24 per thousand could be an underestimate. It would have been better to use male mortality figures rather than those for the population as a whole, but I didn't have these on hand.

However, the correctness of Estimate Two depends heavily on the represent-

ativeness of those *Amateur Radio* readers who filled out and returned the survey form. Even if they were only a little older on average than the general membership, our actual mortality rate would be significantly less than the estimate shows. Other factors, such as the use of the 85+ data may also affect the final figure.

Our Rising Mortality Rate

It was mentioned earlier that a greater proportion of a static, ageing population die with each passing year due to the rapid increase in age-specific death rates. While this exercise is highly speculative, let us see what happens if we increase our average age by just five years (to 64).

This change is quite likely to happen in the next several decades or so if little is done to change our demographic profile. For simplicity, we will use the *Amateur Radio* survey results, but increase the ages in each of the groups by five years; the percentages themselves stay the same.

Age range	% WIA pop	Mortality rate (Ref 2)
Under 55	27%	1.7 (20-55 figure used)
55-74	48%	17
75-89	20%	65 (75-84 figure used)
90+	5%	156 (85+ figure used)

Thus the total mortality rate = $(1.7 \times 27 + 17 \times 48 + 65 \times 20 + 156 \times 5) / 100 = 29$ per 1000.

Because of the unavailability of mortality rate figures for the upper age groups (the ABS figures include the 85+ as one group), this figure is probably an underestimate. Assuming a mortality rate 90/1000 for the 75-89 group, and 250/1000 for the 90+ group, we arrive at a figure approaching 40 per thousand. Remember that, as with the previous calculations, mortality figures are for the

population as a whole, and not merely the male component (which would more accurately represent the *Amateur Service's* composition).

The Bottom Line

- WIA members are dying at two to four times the rate applicable for the general population;
- An annual intake of between 80 and 120 new members is required just to replace deaths;
- This figure makes no provision for those who relinquish WIA membership due to ill-health;
- Nor does it make any allowance for members who resign for other reasons; and
- The 80-120 requirement will rise in future years if our average age continues to increase.

A mere five year increase in our average age could:-

- Increase our annual mortality rate by up to 50 percent;
- Mean that WIA members die at between three and six times the rate applicable for the general population; and
- Require an annual WIA membership intake of 120-180 just to replace deaths.

Conclusion

The above figures paint a grim picture of a WIA (and amateur service generally) in terminal decline. However, such a decline should not be accepted before it has happened; action should be taken to prevent or at least retard it. Membership and member services should be the WIA's number one priority. The WIA's survival demands nothing less.

References

1. AR June 1996, Editorial
2. WA Year Book 1992

*7/1 Garran Place, Garran ACT 2605

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Sign up a new WIA member today - we need the numbers to protect our frequencies and privileges

■ Book Review

The Novice Operators Theory Handbook

Author: Graeme Scott VK2KE

Reviewed by: Evan Jarman VK3ANI

*Third Edition 1996, paper cover,
96 pages 297 mm by 210 mm,
ISBN 0646301624.*

The second edition of this handbook was reviewed in *Amateur Radio*, March 1995, page 22.

This handbook has been written to help those wanting to obtain a Novice licence. Its success demonstrates a need by those who want to reach the licence stage and learn through experience rather than start as instant experts.

It is a series of simplified explanations of the core subjects of radio theory. It does not require intense concentration. In the text, each subject is kept to a few paragraphs and subtitled. Related subjects are grouped together in chapters. Diagrams are used liberally throughout the book.

The author is an experienced technical teacher and suggests a course of study in the introduction. It involves reading a chapter then using a series of test questions in the appendix to check comprehension. There are 12 chapters of theory with a couple of chapters on ancillary topics. The emphasis is on acquiring knowledge rather than reading a book.

On completion, the reader can get, at cost, a sample exam if they wish to test their overall knowledge.

Regulations and Morse code are not covered.

The third edition does not vary greatly from the second. The differences are obviously fine tuning. It was disappointing to note an omission which

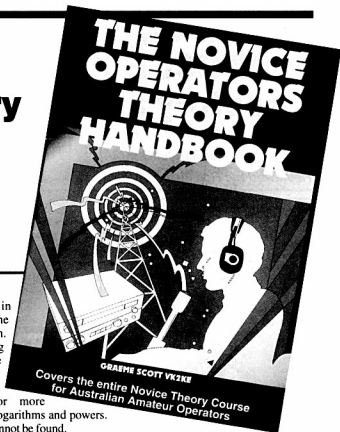
was referred to in the review of the previous edition. In discussing attenuators, the author did refer to the chapter on mathematics for more information on logarithms and powers. This entry still cannot be found.

Bruce Bathols in his review of the first edition (*Amateur Radio*, June 1982) said: "The authors are to be congratulated on their efforts, and a candidate who has fully studied this book, together with the SMA operator's handbook and Morse code require-

ments, should have little difficulty in passing the Novice operators examination."

The author, in this third edition, clearly wants to keep it that way for as many people as possible.

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VK QSL BUREAUX

The official list of VK QSL Bureaux. All are Inwards and Outwards unless otherwise stated.

VK1	GPO Box 600 CANBERRA ACT 2601
VK2	PO Box 73 TERALBA NSW 2284
VK3 Inwards	Box 757G, GPO MELBOURNE VIC 3001
Outwards	40G Victory Blvd ASHBURTON VIC 3147
VK4	GPO Box 638 BRISBANE QLD 4001
VK5	PO Box 10092 Gouger St ADELAIDE SA 5001
VK6	GPO Box F319 PERTH WA 6001
VK7	GPO Box 371D HOBART TAS 7001
VK8	C/o H G Andersson VK8HA Box 619 HUMPTY DOO NT 0836
VK9/VK0	C/o Neil Penfold VK6NE 2 Moss Court KINGSLEY WA 6026

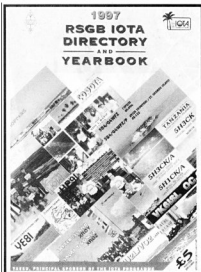
■ Book Review

1997 RSGB IOTA Directory and Yearbook

Publisher: Radio Society of Great Britain

Edited by: Roger Balister G3KMA

Reviewed by: Ron Fisher VK3OM



popular amateur radio award programs. In order to participate, it is important to have all the information currently available.

There are fourteen chapters in the book and these certainly do give you all the information you will ever need. Let's look at a few of the headings. Chapter

one gives an introduction by Roger Balister G3KMA who explains how the millennium will be an exciting time starting with IOTA 2000. Sounds as if it might be worth waiting for. Following on are chapters on preparing for an IOTA DXpedition, validation of island operations, and the most wanted IOTA island groups.

The IOTA Directory is printed in A4 size, has a colourful soft cover and runs to 96 pages. Our copy was received direct from the RSGB but it should be available soon from your local WIA Bookshop or from Daycom Communications Pty Ltd in Melbourne. In the meantime, the price direct from the RSGB is \$US15 plus postage, or 25 IRCs plus four IRCs for air mail postage. The RSGB is also happy to accept orders by credit card.

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■ Power Supplies Power Supply Protection

John Bedwell VK3EHZ describes a simple but effective means of protecting a power supply.*

What, I hear you say, is IOTA? Well, it's the latest craze for DXers. Islands On The Air. Find yourself an island, inhabited or not, and get on the air. One of the great things about IOTA is that your island doesn't have to be a thousand kilometres from anywhere.

But first a bit of history. The Islands on the Air (IOTA) awards program was created in 1964 by the late Geoff Watts, a leading short wave listener in the United Kingdom. It was taken over by RSGB (Radio Society of Great Britain) volunteers at Geoff's request in 1985. Since then it has grown enormously, with well over 8000 IOTA Directory holders world-wide and an estimated 20,000 amateurs pursuing IOTA contacts.

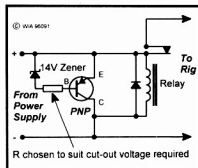
Well, after all that, it had to happen. The RSGB has released a complete guide and directory so now you can find out all about it. This book will prove invaluable to all HF DXers as the IOTA program is now one of the world's most

Are you sure that your power supply is fully protected? Or that your rig is fully protected from your power supply?

Well, think again! After a few years of faithful service my power supply decided it needed a rest, so promptly shorted out the driver transistor to the 2N3055 output transistors. This caused the full 28 volt rectifier voltage to be present at the output terminals and consequently the input to my TS-440s.

The rig lit up like a Christmas tree and my CW transmission was something to be heard. It says a lot for the rig that it survived the punishment but I was determined that such an event would not recur. As it turned out, just as well! An undetected intermittent fault in the power supply caused the same fault problem a couple of weeks later.

Having a large PMG relay in the junk box with a pair of normally closed contacts I made up the enclosed circuit



Schematic of the VK3EHZ over voltage power supply protector.

and fitted the whole thing in a plastic box. The resistor was chosen to suit the available zener diode and made to open the relay at approximately 15 volts. No doubt there is a better way to accomplish the same result but at least it works.

*49 Wincard Drive, Moonah VIC 3188

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■ People

Reg Busch VK3LS

Allen Crewther VK3SM helped VK3LS celebrate his 90th birthday.*



(l to r) Allen VK3SM, Dorrie, Reg VK3LS, Ian VK3XIS, Don VK3NP, Jack VK3BKN and Charlie VK3BIT at VK3LS's 90th birthday party.

Reginald Busch was born on 29 January 1907. He grew up and gained an interest in radio, listening to VIM in Melbourne using a crystal detector. As he could not read Morse, but had learned to identify the VIM call, he would telephone the station and ask them

the name of the ship to which they had been "speaking". Amazingly, they would always tell him.

Reg progressed and learned Morse code, after which he could do without having to ring the VIM operator. In 1923 he obtained his amateur licence and

operated with the LS suffix of his current call, but the prefix varied from OA, to A, to VK3.

Always one to help others, Reg was seconded by the WIA to assist in the formation of an Emergency Radio Unit after the Second World War, and was successful in getting a frequency just outside the 7 MHz band allocated for this work. The unit was operated several times for fires and floods, before being swallowed up in the WICEN network.

Reg also spent some time as the treasurer of the Victorian Division of the WIA, and was made a life member.

He is still very active in his hobby and joins a small net on 144 MHz most mornings for a general natter. He is also developing antennas for 430 MHz and operating on the HF bands.

This year being his 90th birthday, the members of the early morning 144 MHz net travelled to Reg's house for a surprise party. This was very successful. Thanks to the co-operation of Dorrie, Reg's sister-in-law, a very good afternoon was had by all who attended. In addition to the guest of honour and Dorrie, the others were Chas VK3BIT, Jack VK3BKN, Don VK3NP, Allen VK3SM and Ian VK3XIS.

**28 Reynolds Parade, Pascoe Vale South VIC 3044*

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■ Equipment Review

Revex W570

1.6 to 1300 MHz

SWR/Power Meter

*Reviewed by Ron Fisher VK3OM**

A couple of years ago I reviewed a Revex W502 SWR/Power meter. The W570 has the same appearance but the facilities offered are very different. The full range of Revex SWR/Power meters is available from Dick Smith Electronics.

The W570 features an extraordinarily wide frequency coverage. It covers 1.6 to

160 MHz, 400 to 525 MHz, 700 to 1100 MHz and 1240 to 1300 MHz. There are three power ranges of 5, 20 and 200 watts. It is also switchable for RMS or PEP power measurements. The four frequency ranges are selected with four interlocking push buttons on the rear panel of the meter. There are two sensors to cover the frequency range; one which is

built into the meter which covers from 1.6 to 160 MHz and uses standard SO-239 coaxial sockets, and the other which is external, uses "N" type connectors, and is connected to the main unit with one metre of cable. As received, the UHF sensor is screwed onto the back of the main unit (see photo) but it can easily be separated and placed near the equipment in use.

DICK SMITH ELECTRONICS



YAESU FT-8000R 2m/70cm Mobile

The stunning new Yaesu FT-8000R is a state of the art 2m/70cm band mobile transceiver that introduces industry-first features in a very easy to operate combination. The first Amateur VHF/UHF mobile rig to provide superwide receiver coverage (110-550MHz and 750-1300MHz*), together with MIL-STD-810 shock and vibration rating for years of reliable operation, it also features:

- Rear panel socket for 1200 and 9600 baud Packet operation
- 3 selectable power output levels
- Inbuilt antenna duplexer for immediate dualband antenna use.
- 110 memory channels for storage of your favourite frequencies
- Dual receive capabilities (VHF/UHF, VHF/VHF, UHF/UHF)
- Huge "Omni-glow" backlit LCD screen showing frequency, memory, and function activity.
- "Enhanced Smart Search" for automatic search and loading of active frequencies into 50 special memories.

Specifications:

- Frequency coverage:
- Transmit : 144-148MHz, 430-450MHz
 - Receive : 110-550MHz, 750-1300MHz*
*(800MHz Cellular locked out)
 - Transmit power: - 2m : 50w, 10w, 5w,
70cm : 35w, 10w, 5w
 - Size : 140mm x 40mm x 152mm (WHD without knobs)

- Inbuilt crossband repeater facility
- CTCSS for repeater access where sub-audible tones are required.
- Wide range of tuning steps, with different settings for each band

Supplied Accessories:

- MH-42B6J handheld microphone.
- MMB-36 mobile mounting bracket
- Fused DC power cord.

Cat D-3316

2 YEAR WARRANTY

\$899

YAESU FT-736R VHF/UHF Base Station Transceiver

Whether your interest is in talking through your local repeater, operating SSB DX, or talking to the world via satellite, this high-performance multimode base station transceiver can do it all! In its standard form, the FT-736R provides 25W output on the 2m (144-148MHz) & 70cm (430-450MHz) bands in SSB, CW, and FM modes. Can be expanded to cover the 6m (50-54MHz) & 23cm (1240-1300MHz) bands by installing optional modules.

Features:

- Digital control with keypad or VFO frequency entry.
- Efficient switch-mode AC power supply.
- 100 general-purpose memories.
- 10 full-duplex crossband memories, 2 independent VFOs per band.
- 2 full-duplex VFOs - transmit & receive frequencies (and modes) can be tuned independently or synchronously for satellite operation.
- Adjustable IF Notch and IF Shift filters.
- Noise blanker, 3-speed selectable AGC.
- High-stability (+/-1ppm) PLL reference oscillators.
- Speech processor and VOX for SSB.
- VFO or selectable channel steps on FM.
- Digital input connection for packet TNCs.



2 YEAR WARRANTY

Specifications:

- Modes: LSB/USB (J3E), CW (A1A), FM (F2D, F3E)
Receiver: 50, 144MHz: Dual Conversion
Other Bands, Triple Conversion
Sensitivity SSB/CW better than 0.2uV for 12dB S+N/N
FM: better than 0.35uV for 12dB SINAD
Dimensions: 368 x 129 x 286mm (WHD)

Cat D-2920

\$2495



Offers expire 31/5/97

**For further information, orders or the location of your nearest store call:
1300 366 644 (Local Call Charge) Or Fax: (02) 9805 1986**

Yaesu FT-1000MP

Incredible Performance, Amazing Price!



Now's your chance to pick up Yaesu's latest high performance HF base transceiver, the new FT-1000MP, at a great new price. You'll be amazed at its incredible performance, but if you need convincing, just read what the experts have to say.

On Operation:

"I would classify the transceiver as 'user friendly' compared to some other modern transceivers I have operated." - CQ
 "..... we found it to be a proficient performer." - QST
 ".....In term of ergonomics my preference is marginally for the Yaesu.....The second receiver is certainly better implemented....."
 - Radio Comms (UK)

On Documentation:

"In general, Yaesu's manuals are the epitome of clear, concise, and complete documentation, and the FT-1000MP's 104 page Operating Manual is no exception." - QST

On The Receiver:

"Its receiver is a real beauty ... its very clean and the audio is very clear and punchy" - Radio & Communications
 "Measurement of second order intermodulation ... showed an average result for the IC-775DSP but the FT-1000MP was some 10dB better than any other radio measured." - Radio Comms (UK)
 "The receiver is quiet and good at its job, and Yaesu's EDSP is icing on the cake." - QST
 "Certainly, this receiver is designed to withstand the onslaught of very strong signals...." - CQ

On The Transmitter:

"CW operators will be impressed with the FT-1000MP keyer." - CQ
 "The transmitter is good as well, with a lightning fast automatic tuner built in as standard." - Radio & Communications
 "The FT-1000MP has excellent spectral purity of the output signal." - CQ

Digital Signal Processing:

"The EDSP filter operates smoothly and effectively in all of its modes." - CQ
 "Having the DSP built-in means it works as well as possible - and is clearly better than most after-market add-ons." - Radio & Communications
 "The double-whammy of crystal and mechanical filters plus DSP in the FT-1000MP is a killer combination." - QST

Conclusions:

"... I am unable to report finding even a picky fault with the FT-1000MP." - CQ
 "So does the inbuilt DSP say 'buy me'? In this humble scribes opinion, you bet!" - Radio & Communications
 "The FT-1000MP offers performance and flexibility in a quality radio." - QST

Interested in more information? Why not call us for a copy of Yaesu's 12 page colour booklet, 46 page Technical Overview, or for copies of various magazine reviews. We're sure you'll soon agree that the world of HF transceivers has just taken a giant leap forward.

QST - ARRL QST (USA) Magazine review April 1996

CQ - CQ (USA) Magazine review April 1996

Radio Comms - Radio Communications (UK) review

January 1996

Radio & Communications - Radio & Communications (Aust) review July 1996

Cat D-3400

\$3995

2 YEAR WARRANTY



For further information, orders or the location of your nearest store call:

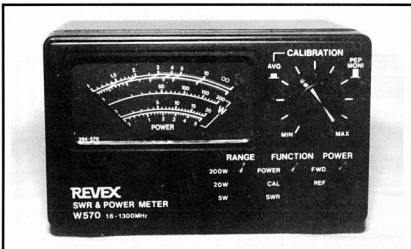
Ph: 1300 366 644 (local call charge)

Or Fax: (02) 9805 1986

DICK SMITH
ELECTRONICS



B 2912



The Revex W570 SWR/Power meter

The meter measures 120 mm wide, 72 mm high and 85 mm deep. It weighs in at 830 grams. The finish is charcoal black.

The W570 on Air

One thing missing from the W570, that was included with the earlier W502, is the meter illumination. While the scale is very clearly calibrated you will need a fair degree of room lighting. Of course the W502 required a 12 volt DC supply to power the lamps but this also served another important purpose. It powered an active circuit that operated the PEP metering function. This gave a very accurate PEP reading. The meter under review simply switches a 33 μ f capacitor across the meter circuit which is intended to charge up to the peak value and so produce a peak reading.

Unfortunately, this doesn't happen and so the PEP reads low by about 20 to 30%. The actual reading depends on the degree of compression applied to the transmitted signal, so a signal with no compression will read much lower than a highly processed signal even though the actual PEP might be the same. A test with a 100 watt transmitter showed about 70 watts with 10 dB of compression. With the processor switched out, the reading dropped to about 50 watts, although the scope was still showing 100 watts PEP. However, the W570 has too many good features to let this worry us too much.

Steady power measurements were within a few percent of my standard meters on HF and 146 MHz. The UHF

side of things proved somewhat harder to evaluate. All I can say is that with my 70 cm transceiver I did get very believable readings. I do not have a meter with which to compare it.

One thing worth noting is that no circuit of the UHF sensor is included. I believe that it is probably a strip line type with the sensitivity adjusted for each frequency range. For the price, this method is probably a reasonable solution.

The instructions supplied consist of one and a half pages of text plus a circuit diagram which does not include either sensor unit. The same instructions are also printed in Japanese.

The Bottom Line

At a retail price of \$369 the W570, which really takes the place of at least three ordinary SWR/power meters, is very good value. The construction quality is of a high standard and Dick Smith Electronics backs the instrument with a generous guarantee. The W570 is recommended.

*24 Sugarloaf Road, Beaconsfield Upper VIC 3808

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The UHF sensor attached to the back of the SWR/Power meter.

**Your
Hobby**



**Your
Voice**

Representing Radio Amateurs Since 1910

AMSAT Australia

Bill Magnusson VK3JT*

National co-ordinator

Graham Ratcliff VK5AGR

Packet: VK5AGR@VK5WI

E-mail: vk5agr@amsat.org

AMSAT Australia net:

Control station VK5AGR

Bulletin normally commences at 1000 UTC, or 0900 UTC on Sunday evening depending on daylight saving and propagation. Check-ins commence 15 minutes prior to the bulletin.

Frequencies (again depending on propagation conditions):

Primary 7.064 MHz (usually during summer).

Secondary 3.685 MHz (usually during winter).

Frequencies +/- QRM.

AMSAT Australia newsletter and software service

The newsletter is published monthly by Graham VK5AGR. Subscription is \$30 for Australia, \$35 for New Zealand and \$40 for other countries by AIR MAIL. It is payable to AMSAT Australia addressed as follows:

AMSAT Australia

GPO Box 2141

Adelaide SA 5001

Keplerian Elements

Current keps are available from the Internet by accessing the AMSAT FTP site, <ftp.amsat.org> and following the sub-directories to "KEPS".

this year? Will it be the same old callsigns again or can we look forward to some new blood?

My main activity is on the digital birds with occasional excursions to AO-10 and MIR. It would be nice to hear from someone who frequents the others with some better news regarding operator numbers. Sadly, my regular contact who reported on the RS and analogue birds is one of those who has given it all away.

P3D - First the Bad News

It seems there has been another delay in the launch of P3D. It has been caused by a delay in the launch of the Ariane 502 vehicle which is to take P3D into orbit. While this will give the construction team a bit of breathing space, it will add to the cost of the launch. More as it comes to hand. The launch has been delayed until mid-September 1997.

P3D - Some Good News

(From the AMSAT News Service - While you are reading this you may care to ponder on the enormous amount of work put in by the members of the P3D team or our behalf.)

In a joint statement issued on 7 March, AMSAT-DL Vice President Werner Haas DJ5KQ, and AMSAT-NA Executive Vice President Keith Baker KB1SF, gave a brief run-down of the team's significant progress over the previous two weeks. "Phase 3-D is alive and doing very well!" said Werner. "We have now accomplished all the objectives we had hoped to achieve on this, our first major joint integration visit in Florida."

During this period, the combined team installed, powered-up and then extensively tested the satellite's main power and computer (IHU) systems, as well as transmitters for X-Band, V-Band and U-Band. All performed without problem. In addition, all of the spacecraft's many communications receivers have now been built into the satellite and they, too, were thoroughly tested and are now working well. Likewise, the SCOPE camera experiment built by JAMSAT, the Japanese AMSAT group, was successfully installed and powered up while in the spacecraft.

"First light" was also received via SCOPE during this test and the image quality of the initial pictures was absolutely superb. Besides installing the various transmitters and receivers, Phase 3-D's Intermediate Frequency (IF) switching matrix, a device that will allow almost any receiver to be cross linked to any transmitter, as well as the LEILA experiment (strong signal attenuator)

were also successfully brought on line in the spacecraft.

Another major integration milestone came late Tuesday afternoon, 4 March, when team members Werner Haas (DJ5KQ), Peter Guelzow (DB2OS), Keith Baker (KB1SF), Stan Wood (WA4NFY) and Lou McFadin (W5DID) completed the first QSOs via Phase 3-D's configuration U/V "transponder". For this test, P3-D's U-Band receiver was cross-linked to the V-Band transmitter through the IF Matrix. What's more, the distinctive "warble" warning tone and notch capabilities of P3-D's LEILA were clearly demonstrated when Stan Wood deliberately overpowered his SSB "uplink" signal, thus triggering LEILA to first superimpose its warning tone on his "downlink" signal. When Stan persisted in overpowering his uplink, team members then watched (in amazement!) as the LEILA cut his downlink signal via P3-D's V-Band amplifier from some 140 watts to about 2 watts! Needless to say, the members of the German communications team were most pleased to finally show their American counterparts the fine quality and function of Phase 3-D's extremely capable communications suite.

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Satellite User Numbers Update

It's a year now since I counted the number of station calls from our locality appearing on the digital satellites, KO-23, KO-25 and UO-22. I've continued to log new callsigns and the result is a bit disappointing.

VK4 and ZL1 each showed an increase of three. VK3 and VK6 increased by one each while ZL2 increased by two. Other states remained the same, although there were two extra in the "others" category, ie. SE Asia, Oceania and marine mobiles.

Now, my little survey is by no means exhaustive, but there certainly has not been a spectacular increase. Perhaps we should ask ourselves why. Is it too hard? Too expensive? Is the dreaded Internet keeping people away? Are amateurs still frightened by computers? Maybe we're not selling it effectively. What will happen when P3D comes on line later



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How Do You Answer That?

"9600 baud!...that's so slow...why do you bother?" Anyone who has friends who "surf the net" has had to fend off questions like that. The point being discussed is, of course, the maximum baud rates that generally apply to the digital satellites and the packet radio network. "Come on now...anyone worth his salt is running 28.8k now and that's only if you don't have access to something faster". ("Thinks"...probably at work).

Well, just how do you answer questions like this? It's not easy. If the person is familiar with electronics you may be able to explain it away with terms like available bandwidth and modulation method limitations, lead design time of the satellites, etc, but this still leaves the basic question unanswered of why do we bother?

Well, why **DO** we bother? One way I've found that works is to point out that they (the net-surfers) "do it" over the telephone lines and, as such, are:

1. paying for the service; and
2. not in control of the service.

We "do it" by radio. Amateur radio. We use our amateur radio licence and equipment. We experiment with new and better ways of utilising the limited bandwidth. We push higher and higher in frequency. We build better antennas, pre-amplifiers and demodulators. We refine our operating techniques and employ the latest in amateur software and technology. **WE BUILD AND CONTROL OUR OWN COMMUNICATION SATELLITES.** All "they" do is plug in a modem and switch it on; and anyone can do that.

This approach can sometimes work. If the original remarks were more than merely flippant you may even gain a convert to our cause. For all its visual whiz-bangery, the net can have a certain numbing effect to the brain. A lot of thinking people turn off after a while. They are looking for something better. We know something better - amateur radio satellites. Slower perhaps, but the essential difference is that amateur radio is open-ended, expanding and, above all, stimulating.

SatSpy Update

One of my great delights is satellite watching at night. I know a lot of others share this fascination. In the January 1996 column I first made mention of a tracking program with a difference. It's called SatSpy. Written by David Acappella and specially designed for keeping track of visible satellites, SatSpy offers great features for the satellite watcher.

David has recently updated the software. The thing that divides good from bad software is support. In the case of satellite tracking software the most crucial factor is



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the availability of accurate keplerian elements. David's Web site has fresh keeps each week for the 1200 or so most visible satellites. This service means you don't have to scrounge around looking through various sources for them, filtering the larger magnitude satellites from the ones too dim to see and putting them into a form that the program can use. It's all done for you. Now that's support!

Version 3 is on the drawing board at present and David is asking that users contact him with their "wish-list" of goodies they would like to see included. If you use SatSpy, think about any improvements you would like to see, and convey them to David. This is how good software evolves.

SAFEX, MIR 70 cm Repeater

This repeater is reported to be operational. The uplink frequency is 435.750 MHz FM and the downlink frequency is 437.950 MHz FM. A sub-audible tone of 141.3 Hz is required for access. It must be remembered that Doppler shift on a fast moving satellite can be a problem on 70 cm and above. You should really have a method of compensation in place before you try to access this repeater.

AO-10 and Its New Keys

The old bird is working very well. Surprisingly, not many stations are to be heard. I have called many CQs on an empty pass band recently. Good signals with just 10 watts of uplink power. Sometimes deep fading is evident. The keplerian element set has been updated and is now appearing on all sources.

DO-17 (DOVE) 2.4 GHz Beacon Still On

DOVE is transmitting on S band 2401.220 MHz. The 0.8 W S band transmitter is being kept on as a test signal for those working on getting 2.4 GHz receive equipment going for the P3D satellite. The S band antenna is a whip located on top of the satellite. It points toward the earth in the southern hemisphere and is easy to hear. Doppler shift can change the downlink frequency up to 100 kHz during a pass.

RMB 1627, Milawa VIC 3678
E-mail: vk3jr@amsat.org

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ALARA

Sally Grattidge VK4SHE*, ALARA Publicity Officer

Welcome New Member

A warm welcome is extended to new member Eileen ZL1BRX, sponsored by Jean VK5TSX.

Congratulations

Congratulations to Jenny VK5ANW on becoming an Australian citizen (after how many years?).

And congratulations to Deb VK5DEB for winning the first prize in the CJ Dennis Poetry Competition at the Auburn Festival in September with a poem about the death of her grandfather in a nursing home a few years ago. Also, for completing her Bachelor of Arts at Flinders University, and winning a scholarship to study English Honours at the University of Adelaide.

Christine WB2YBA

Christine has been a member of ALARA for many years and was last in Australia in 1993 when she visited Mavis VK3XB. She took a lot of video footage during her stay and recently edited a video on "Australia's Unique Mammals". But she was disappointed with the result due to some editing equipment problems, so will have to do it again. She also did a video featuring Austine VK3YL shortly before she became a Silent Key. The next visit will see her camera aimed at birds and then flowers, so we may see her at the ALARA meet in Brisbane 1999?

Christine breeds and trains miniature

Schnauzer dogs, and was interested to see several dog shows while she was in Melbourne. A recent video she made on "Newark's Cherry Blossom Festival" has been accepted at an International Photography Salon, and she has received a prestigious award from the American Medical Women's Association.

Silent Keys

From Christine WB2YBA comes news that Ethel Smith K4BML died on 5 February 1997 of breast cancer. A founder of YLRL, Ethel was a devoted member, and Editor of the newsletter, at the time of her death. She was resigned to her death and died without fear. The members are planning to use her call for YLRL, and name a scholarship fund in her honour.

Anny DF2SL (see photo) suffered a fatal heart attack on 23 March, and will be missed by her many friends around the world. Anny was involved in RTTY, telephone and CW in World War 2, serving in Brussels, France and the Netherlands, including a period of imprisonment in Wilhelmshaven before returning home in 1945.

She married in 1947 and had two sons. In 1969 she was a founder member of the radio club in Tilertissen where she was treasurer for ten years and taught CW. At first she was the only YL with 14 OMs. Now there are 75 members, four of which are YLs.

In 1974 she met Lia WA2NFY on-air,

beginning a lasting friendship and many meetings. Anny was a long-standing member of ALARA, enjoyed reading the Newsletter, and was hoping to work more VK YLs including Beth VK7YL, Mavis VK3KS and Yvonne VK5AYK when conditions improve.

Phyllis KA1JC

Phyllis runs a YL Packet Group and welcomes new members. Find her at KA1JC@WA2LKI#VEN.FL.USA.NA. She also runs the "Butterfly DX Net" on 14.226 MHz starting at 2000 UTC every Monday, Tuesday and Wednesday.

New Souvenir

ALARA is to introduce a cloth badge, which should be a popular souvenir. It will be easy to send to DX members, and great to wear on public occasions.

WARO HF Net

WARO holds a net on Mondays at 8.00 pm (ZL time) on 3.695 MHz. The second and fifth Mondays are now on 3.620 MHz.

Apology

In April *Amateur Radio* I wrote a piece on the adventures of Kristi VK9NL in Svalbard and Vietnam, which was not correct. The story was in a letter from Kristi, but the adventurous YL was Unni Gran LA6RHA. Apologies to Kristi and Unni - that should teach me to read every word of what is sent to me before using it!

*C/o PO Woodstock, QLD 4816

Tel: 077 788 642

Packet: VK4SHE@VK4RAT.#N.Q.QLD.AUS.OC

Internet e-mail: rgratid@ozemail.com.au

ar



Olive VE7ERA, Anny DF2SL and Lia WA2NFY.

WIA News

The WIA bids a warm welcome to the following new members who were entered into the WIA Membership Register during the month of March 1997:

L21035 MR J J OKSIUTA
L30951 MR H TURNER
L60387 MR E G M GREEN
L60388 MR M MCCLINTOCK
VK1HCC MR C HOLMES-CLARK
VK2ADG MR R LOFTUS
VK2AO MR D S A PEAKE
VK2ASW MR D J POLLARD
VK2AYD MR D PILLEY
VK2BKP MR J K PICKETT
VK2EAU MR M R HALLINAN
VK2EYC MR I D MCKAY
VK2IEQ MR P JENNI
VK2JPR MR G F ENGLISH
VK2KKT MR K J TOMSON
VK2KWY MR D B HENDERSON

VK2KXN MR N B MCLEAN
VK2PB MR W P PAULL
VK2TUF MR B A COADY
VK2VCR MR A R WILLIAMSON
VK2VUB MR L J BUTCHER
VK2WE MR K W MATTHEWS
VK2WHD MR W H DOUGALL
VK2XN MR W R FOURACRE
VK3AEU MR O R GELLERT
VK3BZP MR J VALE
VK3HCP MR G R PERRY
VK3NI MR G DOLFEN
VK3OK MR T MARLOWE
VK3YFG MR J R POWELL
VK3ZK MR J L WICKHAM
VK4HBA MR A BANNAH
VK4WMC MR W MCCARTHY
VK2XNZ MR B FURBY
VK5KIC MR I D CROMPTON
VK6MH MR R A MACDUFF

Awards

John Kelleher VK3DP - Federal Awards Manager*

First and foremost, I must tender an apology to those several good people who have been waiting, in some cases, for what I would consider an unusual length of time, to receive their awards. It seems that a large, antiquated typewriter (capable of LARGE print for the awards) has been throwing a "wobbly", possibly due to old age. It would also appear that the vacant position of Federal Office Manager, upon whom I relied heavily, has not been filled.

The combination of the above is having a detrimental effect on the excellent rapport that has been built up over the last six years with my awards clientele. Maybe, as time passes, I may be allowed to process certificates personally.

Rumours indicate the possible loss of VS6/VR2 along with KH7 and KH9, and later KH5, KH5J/K.

I am about to check my DXCC files, removing some to inactive status. This applies to those who have not supplied any information for the last six years.

Australian Awards

The following Australian Awards are listed in a prominent overseas Awards Directory. I would appreciate any information as to their viability.

1. ATV Award of Queensland.
2. Anzac Award.
3. Worked Australian State Police Award.
4. Blue Mountains Radio Club Award.
5. Brisbane Amateur Radio Club Award.
6. Bunyip Award.
7. HMAS Canberra Award.
8. Central Coast Award.
9. Bougainvillea Award.
10. Port End Award.
11. Endeavour Award.
12. Coastal Towns Award.
13. Port Phillip Bay Award.
14. Macarthur Award.

15. Mineral Fields Award.
16. HMCS Protector Award.
17. Worked All Queensland (Cities & Towns) Award.
18. Worked All Queensland (Shires) Award.
19. Rally Australia Award.
20. Redcliffe City Award.
21. Black Marlin Award.
22. Rockhampton Award.
23. Solitary Islands Award.
24. HMAS Sydney Award.
25. VK8 Outback Award.
26. Wildcat Award.

And Awards from the NSW Division of the WIA:

27. NSW Parks Award.
28. NSW Cities, Municipalities & Shires Award.
29. VK2 Division's 25's Award.
30. VK2 Clubs Award.
31. VK2 Special Award.

There are even more from VK5/6 listed elsewhere. I found myself checking frequencies and times, only to be met with absolute silence (over the QRN). I must point out that none of the awards listed above fall into my domain as Federal Awards Manager. I would like to hear some activity, as would we all. Maybe the approach of the millennium will grant our wishes. My reason for seeking information about the above Awards is to provide an accurate survey to local and overseas Awards Directory suppliers.

In the meantime, please answer those DX Amateurs who are frantically calling CQ VK/ZL. You may have already worked his/her country, but he/she would not be calling VK/ZL specifically, if they did not want you! Also remember that the final courtesy of a valid contact is a QSL card.

This month's awards come from Argentina, Austria, The Azores, and Belarus.

LU25PX Award

This award is issued for contacting at least 25 Argentine prefixes since 12 January 1989. Endorsements are available for over 25 prefixes. There are separate certificates for mixed, phone, and CW. GCR accepted. The fee is \$US6.00 or 10 IRCs for the basic award. Endorsements are \$US2.00 or three IRCs. Apply to: Grupo Argentino de DX, Award Manager, PO Box 420, 1000 Buenos Aires, Argentina.

From Austria - Worked Prefix Zone 15

Contact countries/prefixes in CQ Zone 15. These are FC/TK, HA, HV, I, IT, IS, OE, OH,

OK, OM, SS, SP, UA2, UP/LY, UQ/YL, UR/ES YU, ZA, 1A0, 4U1VIC, 9H1, and 9A1/M1/T77.

Class 1 needs 15 countries and 50 prefixes, Class 2 needs 12 and 40, Class 3 needs 8 and 30, and Class T (160 m) needs three and 8.

The fee is 10 IRCs. GCR list is OK. Send your application to: Oesterreichischer Versuchssendeverband, Landesverband Wien Diplomaterat, PO Box 777, A-1062, Vienna, Austria.

Azores Counties Award

Contact stations in different islands/counties of The Azores after 28 May 1986. There are three classes: Bronze for 15 counties, Silver for 17 counties, and Gold for all 19 counties. All bands and modes. Apply with cards or copies of the cards, plus a fee of \$US5.00 or 10 IRCs to: URA Award Manager, PO Box 140, P-9702 Agra Codex, Azores, Via Portugal.

Counties List

- CU1. Island of Santa Maria. County Vilo Do Porto.
- CU2. Island of Sao Miguel. Counties of Ponta Delgada, Vila, Fraca Do Campo, Lagoa, Nordeste, and Povoaçao.
- CU3. Terceira Island. Counties of Angra Do Heroismo, and Praia Da Vitoria.
- CU4. Graciosa Island. County of Santa Cruz Da Graciosa.
- CU5. Island of Sao Velas. County of Calheta.
- CU6. Island of Pico. Counties of Madalena, Lajes, Sao Roque.
- CU7. Island of Faial. County of Horta.
- CU8. Island of Flores. Counties of Santa Cruz and Lages.
- CU9. Island of Corvo. County Vila Nova Do Corvo.

Belarus Award

Work UC/RC and EV/EW amateurs in Oblasts as indicated. Second Class, 30 stations in three Oblasts. First Class, 30 stations in four Oblasts. The Oblast list is:

Oblast	Suffix	Name
005	L	Brest
006	W	Vitebsk
007	O	Gomel
008	I	Grodno
009	C	Minsk
010	S	Mogilev
188	A	Minsk City.

For example UC20XX would be Obl 007 and area of Gomel.

There are no band or mode restrictions. Provide a GCR list and a fee of seven IRCs to: Gene Zhukovski, PO Box 33, Minsk - 13, 220013 Belarus, Europe.

Good hunting!

*4 Brook Crescent, Box Hill South, VIC 3128
Phone (03) 9889 8393

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Club Corner

Summerland Amateur Radio Club

Our next major event will be the sponsoring of a **Computer Expo**, in the Lismore City Hall, on Saturday, 31 May. Many commercial displays have been organised and visitors will be able to get "hands on" experience, including the Internet. Bring and Buy tables will be open, there will be Lucky Door Prizes throughout the day and refreshments will be on sale. The doors will be open from 9-30 am to 4-30 pm. Admission \$3, or \$5 per family.

The Club has had an Internet site installed at the Clubrooms. This, and our other facilities, are available to members on Thursday evenings, Sunday afternoons and other times by mutual arrangement. A moderate charge, to cover expenses, will be levied for use of the Internet.

For more information on membership and all club activities, contact Bert VK2HIV on 066 243 239, or Graeme VK2GV on 066 851 336. Our e-mail address is sar@norcom.au

Graeme VK2GJ
Publicity Officer

Oxley Region Amateur Radio Club

The Oxley Region Amateur Radio Club will, once again, be holding its Annual field Day at the Sea Scouts Hall, Buller Street, Port Macquarie, on 8 June 1997, commencing at 9.00 am.

The field day will have the usual events of food, fox hunts, trade displays and disposals.

All are welcome. For further information, please contact Dave Tarrant VK2HBC on 856 381.

Dave VK2HBC
Secretary

WIA News

British Amateurs Lose Part of 3 cm Band

Amateurs in the United Kingdom have lost part of the 10 GHz band, from 10.150 through 10.300 GHz, from 1 April 1997. It was withdrawn from the Amateur Service in the UK by the British regulatory authority, the Radiocommunications Agency.

The 3 cm amateur band in the UK is now in two segments, from 10 to 10.150 GHz, and from 10.300 to 10.500 GHz.

Urunga Radio Convention

The oldest Radio Convention in Australia was held over the Easter weekend at Urunga on the North Coast of NSW.

Urunga's old style hospitality attracted 67 registrations ranging in age from five years to 91 years. Foundation member Peter VK2PA and XYL Ina were there, and Paul K9CDW made the trip from Chicago especially for the weekend. The Urunga scramble, mobile and pedestrian fox hunts, and talk-ins were popular while a dozen or more quizzes and competitions kept the onlookers busy.

Next year will be the 50th Urunga Convention and we want to catch up with the old timers that attended the early

conventions. If you have attended previously, contact Arnold Austin VK2ADA at QTHR, or on (066) 54-1274.

Jamie Campbell VK2YJC

Radio Amateurs Old Timers Club (RAOTC)

Age is not a pre-requisite for membership of the RAOTC but, if it was, our latest applicant for membership would sail in on those grounds. Harry Angel VK4HA, who is now 105 years old, is our latest recruit.

Harry, who was first licensed with his current call in 1935, was an original ANZAC who reduced his age to join up, and fought again in World War 2. Harry rode at the head of the ANZAC parade in Brisbane last year and received wide-spread publicity for this. Welcome, Harry!

Allan Doble VK3AMD
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Contests

*Peter Nesbit VK3APN - Federal Contest Coordinator**

Contest Calendar May - July 97

May 3/4	ARI DX Contest (CW/SSB/RTTY)	(Apr 97)
May 10/11	CQ-M DX Contest	(Apr 97)
May 17/18	Sangster Shield Contest	(Apr 97)
May 24/25	CQ WPX CW Contest	(Feb 97)
Jun 1	Portugal Day Contest (SSB)	
Jun 7/8	IARU Region 1 Field Day (CW)	
Jun 14	QRP Day Contest (CW)	
Jun 14	Asia-Pacific CW Sprint	(Jan 97)
Jun 14/15	ANARTS RTTY Contest	
Jun 14/15	South America WW Contest (CW)	
Jun 21/22	VK Novice Contest	
Jun 21/22	All Asia CW DX Contest	
Jun 28/29	ARRL Field Day	
Jul 1	Canada Day CW/Phone	
Jul 5	Australasian CW Sprint (80 m)	
Jul 5	NZART Memorial Contest	
Jul 12	Australasian Phone Sprint	
Jul 12/13	IARU HF Championship	
Jul 19	South Pacific 160 m Contest	
Jul 19	Colombian DX Contest (Phone/CW)	
Jul 26/27	RSGB IOTA Contest	

When I sat down to write this column this evening, I anticipated something brief followed by the fabled "early night". Several hours later I'm still sitting here, staring at seven pages of text, wondering how it managed to grow to such a length (it will condense down after typesetting).

Most of the effort in writing this column is not finding enough to say, it is pruning out the excess verbiage and packing the maximum information into every word. Mostly this is easy enough, but occasionally a contribution

arrives which is so convoluted as to almost require a QC to interpret it! Fortunately this is fairly rare.

Occasionally, contributions must be held over due to lack of space. I know the authors concerned sometimes feel aggrieved that their copy hasn't appeared immediately; however, if the same issue also contains the results of one or two large WIA contests, often there is little space left over for anything else. In this I am simply following normal editorial policy.

Possibly I could adopt that admirably devious tactic, seen in some overseas magazines, of spreading contest information into the DX column for instance (*No way, forget it! - Editor*). Don't worry, just joking!

For information and assistance this month, many thanks to VK2BQS, VK2SRM, VK3DID, VK3KWA, G3UFY, OE4BKU, VE2ZP, ZL1AAS, JARL and LCRA. Until next month, good contesting!

73, Peter VK3APN

Portugal Day Contest (SSB)

0700-2400z, Sunday, 1 June

This contest takes place on the first Sunday in June each year. Use 80-10 m, SSB only. Send RS + serial number. CT stations will send RS + district code. Score two points per QSO with CT1-4 or EA1-5 and 7, one point per QSO with other countries, and zero for own country. Multipliers are the number of CT districts, plus DXCC countries, plus number of continents worked irrespective of band. Districts are AV BG BJ BR CB CO EV FR GD LR LX PG PT SR ST VC VR VS. Send logs to: "REP Contest Manager/DP91, Apartado 2483, 1112 Lisboa, Codex, Portugal" by 30 June.

IARU Region 1 Field Day

1500z Sat to 1500z Sun, June 7/8

Expect plenty of European activity in this CW contest, which is a collection of regional field days. The rules depend on the sponsoring society but, in general, you send RST + serial, and score four points per QSO with each portable European station. The multiplier is the number of European countries worked. Send logs to: "RSGB (G3UFY), 77 Bensham Manor Road, Thornton Heath, Surrey CR7 7AF, England", postmarked within 30 days of the contest.

1997 QRP Day Contest

Saturday 14 June, 0200-1400z

Presented by Ian Godsil, VK3DID

Sponsored by the CW Operators' QRP Club, the object is for VK, ZL and P2 amateurs to work as many local and overseas stations as possible. Use CW in the normally recognised CW sections of 160-10 m (no WARC bands). The recognised QRP calling frequencies are 1815, 3530, 7030, 14060, 21060, and 28060 kHz (then QSY to a working frequency). Exchange RST + serial number starting at 001. Repeat QSOs are allowed between the same stations, on the same band, with at least three hours between subsequent QSOs.

For QSOs between VK/ZL/P2 stations, score five points for each QRP station worked, and one point for each QRO station worked. For QSOs between VK/ZL/P2 and those outside VK/ZL/P2, score 20 points for each QRP station worked, and 10 points for

each QRO station worked. Add a further five points per 10 m QSO, 10 points per 160 m QSO, 10 points per QSO made using a home brew transmitter, and five points per QSO made using a home brew antenna. QRP stations must not exceed 5 W carrier power to the antenna, and should sign /QRP.

Include full details of the equipment used, and send your logs to: "Ron Everingham VK4EV, 30 Hunter Street, Everton Park, Queensland 4053", by 15 July 1997. A comprehensive range of certificates will be awarded to the top scorers. Those interested in joining the CW Operators' QRP Club should write to: "Kevin Zietz VK5AKZ, 41 Tobruk Ave, St Mary's, SA 5042".

ANARTS WW DX RTTY Contest

0000z Sat to 2400z Sun, 14/15 June

This contest is organised by the Australian National Amateur Radio Teleprinter Society, and runs on the second full weekend of June each year. The object is to contact as many stations locally and overseas as possible on 80/40/20/15/10 m, using any digital mode (RTTY, AMTOR, FEC, PKT, PACTOR, etc) (no satellite). Categories are single operator, multi-operator single transmitter, and SWL. Maximum operating time for single operators only is 30 hours. Rest periods can be taken at any time during the contest. Mark rest periods in log.

Messages comprise RST, time in UTC, and CQ Zone. For each valid QSO, points are claimed according to zone. Space precludes publishing a complete points table; however, the following extracts show the points claimable by entrants in zones 28, 29, and 30. The numbers show the number of points for QSOs with zones 1 to 40, working left to right, top to bottom (ie the first number shows the points per QSO with zone 1, second with zone 2, etc):

Your Zone = 28

31 40 40 44 45 49 53 51 55 54
49 48 46 32 30 26 22 20 20 25
20 11 14 10 15 05 07 02 10 17
31 24 34 25 36 30 22 26 19 34

Your Zone = 29

39 50 43 52 54 47 49 54 52 44
42 37 37 42 39 36 32 30 34 34
28 21 20 20 23 16 15 10 02 09
15 32 42 33 39 31 24 24 20 44

Your Zone = 30

35 50 35 44 46 38 40 44 45 37
41 33 34 49 47 42 38 35 32 43
37 29 30 24 30 22 18 17 09 02
24 07 51 42 47 40 33 32 29 48

Countries are as per the ARRL DXCC list, except that each call area in mainland VK (1-8), VE, JA and W counts as a separate country. Mainland VK, VE, JA and W are not claimable. Call areas outside these mainland

areas (eg VK0, JD1, KL7, KC4) count as separate countries. One's own country (as defined herein) can be worked for QSO points, but not for a multiplier.

Points are determined for each band, using the relevant points table, and then added. Countries are similarly tallied. Continents are those worked irrespective of the band. Total score is points x continents x continents. Non-VKs should add a "VK Bonus" to their points tally, which is 500 points for each VK worked on 80 m, 400 on 40 m, 100 on 20 m, 200 on 15 m, and 300 points on 10 m.

Use a separate log for each band. Logs must show: Date, time, callsign of station worked/heard, messages sent and received, and points. The summary sheet must show: callsign, name and address, bands used, the points claimed for each band, the number of countries worked on each band, the number of continents worked, VK Bonus calculations for world stations, calculations, and declaration. Multi-op entries must show the signatures and callsigns of each operator, and single-op entries must show a summary of operating times. Please include a dupe sheet for any band log over 75 QSOs.

Send log and summary sheet to: "ANARTS Contest Manager, PO Box 93, Toongabbie, NSW 2146" by 1 September 1997. If required, a full page scoring table (last revised 1994), and log and summary sheets are available from ANARTS or myself upon receipt of a SASE.

1997 WIA VK Novice Contest

0800z Sat to 0800z Sun, 21/22 June

Presented by Ray Milliken, VK2SRM

The object of this contest is to encourage amateur operation in VK, ZL and P2, and to promote contacts with Novice and club stations. Only stations in VK, ZL and P2 are eligible to participate. Stations in the same call area may contact each other for contest credit.

All operation must be confined to the Novice frequency allocations in the 10, 15 and 80 m bands, viz 3.525-3.625 MHz, 21.125-21.300 MHz and 28.100-28.600 MHz. No cross-band operation is permitted.

Sections include (a) Phone (Novice/Full Call); (b) CW (Novice/Full Call); (c) SWL. Except for club stations, no multi-operator operation is allowed.

Phone stations should call "CQ Novice Contest", and CW stations "CQ N". Club stations should call "CQ Novice Contest, Club Station", followed by the callsign. Exchange a serial number comprising RS (or RST) followed by three figures commencing at 001 for the first contact, and increasing by one for each subsequent contact.

All operators must, after making five consecutive contacts on the one frequency,

change frequency by at least 5 kHz for phone and 2 kHz for CW (stations using crystal controlled transmitters are exempt from this rule).

Stations may be contacted twice per band, providing at least 12 hours have passed since the previous contact with that station. SWLs may log up to ten sequential contacts made by a station, and must then log at least five other stations before logging the previous station again. The five stations so logged need a minimum of one contact only logged.

Score five points for contacts with Novice or Combined Call stations, ten points for contacts with club stations, and two points for contacts with Full Call stations. SWLs score five points for Novice to Novice contacts, two points for Novice to Full Call or Full Call to Full Call contacts, and ten points for contacts made by a radio club.

Logs must show: Date/time UTC, Band, Mode, Station contacted, Report and serial number sent, Report and serial number received, Points. Each log sheet must be headed "VK Novice Contest 1997". The total claimed score for each page must be shown on the bottom of the page.

Logs must be accompanied by a summary sheet showing: callsign, name, mailing address, section entered, number of valid contacts, and claimed score. The summary sheet must include the following declaration: *"I hereby certify that this station was operated in accordance with the rules and spirit of the contest"*. The sheet must be signed and dated by the operator, or in the case of a club station, by a responsible officer of the committee, or a licensed operator delegated by the committee to do so.

Entrants may submit only one contest log per mode. Logs for entries where an entrant uses more than one callsign whilst operating in the contest will not be accepted. Send entries to: "Novice Contest Manager, Westlakes ARC, Box 1, Teralba, NSW 2284", to arrive by Friday 18 July 1997.

The Keith Howard VK2AKX Trophy will be awarded to the Novice entrant with the highest phone score, and the Clive Burns Memorial Trophy to the Novice entrant with the highest CW score (these are perpetual trophies on permanent display at the Executive Office). In each case, the annual winner will receive a suitably inscribed wall plaque as permanent recognition. Certificates will also be awarded to the top scoring Novice station in each call area, the top scoring station in each section, and to any other entrant where meritorious operation has been carried out. Awards are at the discretion of the contest manager. A Certificate of Participation will be awarded to all operators who submit a log in the contest.

All Asian DX Contest

CW: 0000z Sat to 2400z Sun, 21/22 June
Phone: 0000z Sat to 2400z Sun, 6/7 September

The object is to contact as many stations in Asia as possible, on 160-10 m (no WARC bands). Classes are single operator, single and multiband; and multi-operator multiband. Call "CQ AA" or "CQ Asia". Exchange RS(T) plus two figures denoting your age (YLS send "00"). For each QSO score three points on 160 m, two points on 80 m, and one point on other bands. The multiplier is the number of different Asian prefixes worked per band, according to CQ WPX rules. Example: JS9ABC/7 counts for prefix JS7. Note that JD1 stations on Ogasawara (Bonin & Volcano) Isl belong to Asia, and JD1 stations on Minamitori Shima (Marcus) Isl belong to Oceania. Final score is total QSO points x total multiplier.

Use standard log and summary sheet format, clearly showing new multipliers when first worked. Send logs postmarked by 30 July (CW) and 30 Sept (SSB) to: "JARL, AA DX Contest, Box 377, Tokyo Central, Japan". Indicate phone or CW on envelope. Awards include certificates to the top 1-5 stations in each country on each band (depending on activity), and medals to the continental leaders. For full results please enclose an IRC and SAE with log.

Asian countries are: A4 A5 A6 A7 A9 AP BV BY CR9 EP HL/HM HS HZ/TZ JA-JS JD1 (Ogasawara) JT JY UD S2 TA U/R (CIS) VR2/V6 VU VU4 VU7 XU XV/3W XW XZ YA Y1 YK ZC4/5B4 IS 4S 4X/4Z 7O 8Q 9K 9M 9N 9V.

RESULTS OF 1997 VHF-UHF FIELD DAY

Presented By John Martin, VK3KWA

The number of logs received this year was down from 1996. There was only one log each from VK1 and VK2, 11 from VK3, three each from VK4 and VK5, and one from VK7. Once again, VK6 was conspicuous by its absence.

In spite of the high level of activity in Victoria, it will come as a shock to the VK3s that the winners in two of the four sections came from other states! The main reason is the increasing use of higher bands. For the first time ever, logs were received for all bands up to and including 24 GHz: eight bands in all.

Results

In the single operator section, this year's winner was Trevor Niven VK5NC, who operated from three different locations on seven different bands. No doubt some other entrants will be looking very closely at transverter designs for 2.4 GHz and above during the coming year!

Last year's second place-getter, Rob Ashlin VK3DEM, came second, and last year's winner, Brian Young VK3BBB, came third. In the six hour section, the winner is again Ron Cook VK3AFW, who operated from Mt Buller in north-east Victoria.

In the multi-operator section, the prize again goes to VK3ATL, the station of the Geelong Amateur Radio Club, with an excellent effort. VK41F came second, and no doubt will be trying even harder next year. VK3ER and VK5ARC also did very well, and there could be quite a battle between the club stations next year. Check those scores and see the advantage of having an extra band!

The top scoring home station was Max Pickering VK3TMP, followed by VK3CY and VK3BDL.

Congratulations to the winners, and also to those who entered for the first time this year.

Next Year

This time last year I foreshadowed the dropping of six metres from the Field Day, because that seemed to be the view of the majority. I also mailed a copy of the proposed 1997 rules to all entrants with a request for comments. No responses were received, so it was done. However, when the 1997 Field Day arrived, many people expressed surprise and disappointment that six metres had been dropped, and a majority would now like to see it reinstated!

This can be done, but with the proviso that there will be a very clear restriction on the frequencies used. At the time of writing, six metre operators in many overseas countries are moving towards a new band plan with a dividing line around 50.150 MHz. The idea is that frequencies below 50.150 MHz should be reserved for weak signal work and international DX, with local and contest activity kept above 50.150 MHz.

I therefore plan to reinstate six metres for next year, but with contest operation restricted to 50.150 MHz and above.

The other area which needs looking at is the relative scoring value of grid squares versus individual contacts. The current system makes it well worthwhile to activate the higher bands, in spite of the smaller number of stations that can be worked. I think this should be retained, but with a close eye on the band multipliers to make sure that there is still a fair scoring balance across the spectrum.

As usual, comments would be much appreciated! The rules for the next Field Day will be finalised at the start of November, so that allows seven months for anyone wishing to make suggestions.

The following scores show each band with the QSO points first, followed by the number of locator squares worked.

Call	Name	Loc	144MHz	432MHz	1.2GHz	2.4GHz	3.4GHz	5.7GHz	10GHz	24GHz	TOTAL
SECTION A – PORTABLE, SINGLE OPERATOR, 24 HOURS											
VK5NC	T. Niven	QF01/02	556/8	518/3	740/3	–	992/2	992/2	992/2	992/2	5782
VK3DEM	R. Ashlin	QF42	744/10	987/8	1120/6	616/1	–	–	496/1	–	3963
VK3BBB	B. Young	QF32	1184/17	1407/12	1300/7	–	–	–	–	–	3891
VK5BW	A. Raftery	PF94	1400/23	875/7	580/3	–	–	–	–	–	2855
VK4OE	D. Friend	QG51	832/13	616/4	760/4	–	–	–	–	–	2208
VK3DQW	K. Asplin	QF12	744/12	–	–	–	–	–	–	–	744
Section B – Portable, Single Operator, Six Hours											
VK3AFW	R. Cook	QF32	640/11	896/9	–	–	–	–	–	–	1536
VK3KTO	M. Ide	QF21	480/7	350/2	–	–	–	–	–	–	830
VK2ANK	N. Kefford	QF35/45	400/5	217/1	–	–	–	–	–	–	617
VK1PK	P. Parker	QF44	304/4	–	–	–	–	–	–	–	304
Section C – Portable, Multi-operator, 24 Hours											
VK3ATL	(1)	QF22	1400/20	1596/12	1140/6	–	–	–	–	–	4136
VK4IF	(2)	QG62	1284/10	1183/5	960/4	468/1	–	–	–	–	3895
VK3ER	(3)	QF31	1196/19	1281/12	890/5	–	–	–	–	–	3367
VK5ARC	(4)	?	1004/9	1127/8	560/2	–	–	–	–	–	2691
Section D – Home station, 24 Hours											
VK3TMP	M. Pickering	QF21	660/10	735/6	790/4	–	–	–	–	–	2185
VK3CY	D. Clarke	QF13	572/9	609/5	–	–	–	–	–	–	1181
VK3BDL	M. Goode	QF22	592/10	504/4	–	–	–	–	–	–	1096
VK7XR	A. Hay	QE38	332/5	315/2	–	–	–	–	–	–	647
VK4PJ	P. Brown	QG62	180/2	315/2	–	–	–	–	–	–	495
VK3AIE	B. Gardiner	QF22	172/2	224/1	–	–	–	–	–	–	396

(1) Brisbane VHF Group: J Morris VK4YOL, G Ryan VK4AR, M McIntosh VK4ZMM, E Fittock VK4NEF.
(2) Geelong Amateur Radio Club: M Trickett VK3ASQ, K Jewell VK3AKK, J Barrand VK3DFL, L Sim VK3ZLS, C Gnaccarini VK3BRZ, A Gnaccarini VK3TU, L de Vries VK3PK, C Leone VK3BCL, D Learmonth VK3XLD, S Ludvig VK4HSL/3.
(3) Eastern & Mountain District Radio Club: B Ackery VK3YNG, J Bramham VK3WWW, J Longayroux VK3ZJH, S Fontana VK3VCL, A Tubb VK3BF.
(4) South Coast Amateur Radio Club: B Bates VKSUBJ, S Callow VKSHAP.

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ar

Divisional Notes

VK3 Notes

Jim Linton VK3PC

Articles of Association

The review and updating of our Memorandum and Articles of Association, which had been proposed by a resolution at the 1996 Annual General Meeting, has been completed in an exercise that took ten months to complete. A draft set of documents was made available to the membership for comment last October and, after member input, a Special General Meeting held on 19 March 1997 voted to adopt a number of changes. Those attending the meeting expressed their appreciation for the role of our Secretary, Barry Wilton VK3XV, in steering the complex process through all of the requirements.

As soon as final approval of the documents is received from the Australian Securities Commission, arrangements will be made for the printing of the Articles in booklet form, which will be made available to all members.

Annual General Meeting

The AGM of WIA Victoria will be held on 28 May at the St Michaels Hall, Ashburton.

Written advice about the AGM to members is either as an insert in this magazine, or by direct mail to those who don't subscribe to the WIA journal as part of their membership subscription.

Federal Convention

The 1997 AGM of Federal WIA is scheduled in the first week of this month. WIA Victoria has seven motions on notice for the meeting and will be represented by Barry Wilton VK3XV and Brenda Edmonds VK3KT.

WIA Victoria motions are directed toward a complete overhaul of the management of WIA Federal which has sustained a financial loss of \$45,000 for the year ended December 1996. It will also push strongly for a change to the manner in which the interests of our members are represented with the SMA in Canberra.

Councillors at Club Hamfests

Where possible, WIA Victoria will have a presence at major club conventions to promote the WIA and the hobby of a amateur radio. Such representation occurred at last month's Midland Convention, and is planned

for this month's Moorabbin Radio Club Hamfest '97.

Council intends for WIA Victoria to have a presence at as many conventions as possible during 1997-98, and to intensify its membership recruiting initiatives.

"QRM" News from the Tasmanian Division

Robin L Harwood VK7RH

The Annual General Meeting of the Tasmanian Division was held in Hobart on March 22nd. There was an extremely disappointing attendance of 19, with nine apologies accepted. All the various reports were accepted by those present.

Terry Ives VK7ZTI gave his financial report, having stepped down from Council, and was congratulated on his efforts in turning around the Division's finances; he will be sorely missed on council. Terry is now the North-western Branch Treasurer.

It was revealed that, currently, the Tasmanian Division has 234 members with 45 of them classified as "X" grade membership. Membership is dropping despite new members joining. Concern was expressed at this and council wants some ideas on how to attract new members.

However, the problem of declining membership is not confined to this Division alone, being a nation-wide trend.

VK7JK was also thanked for doing an excellent job in preparing the weekly VK7WI broadcast, despite the occasional hiccups. It is worth noting that some Divisions no longer have regular weekly broadcasts and many interstate are listening to the HF relays. Of course, it would assist us greatly if we knew how many were listening to VK7WI. Please let the relay stations know that you are listening. You will find the frequencies listed in the Divisional Directory on page 56 of this magazine.

Changes to the Constitution were moved by our Honorary Solicitor, VK7ZAX, and approved by the meeting. This means that they are now in effect and can be added to the Articles of Association that were circulated last year. All branch secretaries will have an

updated master copy which can be printed up at a nominal charge.

The meeting expressed dissatisfaction at recent developments with examinations. A motion was moved by VK7BE, seconded by VK7ZDJ, that this Division expresses deep concern over the recent changes, as these alterations were found to be unworkable here in Tasmania. The motion was put and carried and it was further resolved that our Federal Councillor communicate our concerns and report back to the Division as soon as possible on this matter.

There were 12 candidates for Council. Elected were Ron Churcher VK7RN, Phil Corby VK7ZAX, Andrew Dixon VK7GL, Robin Harwood VK7RH, Barry Hill K7BE/VK7AUZ, Mike Jenner VK7FB, John Rogers VK7RH and David Spicer VK7ZDJ.

At a Council meeting following the AGM, the office bearers for the year were elected:

Patron, Col Wright VK7LZ; President, Ron Churcher VK7RN; Vice-President, David Spicer VK7ZDJ; Vice-President, Andrew Dixon VK7GL; Secretary, Barry E Hill VK7BE; Treasurer, Mike Jenner VK7FB; Councillors, Phil Corby VK7ZAX, John Rogers VK7JK, and Robin L Harwood VK7RH.

All ex-officio positions were to be chosen on 19 April in Launceston. They will be notified over VK7WI, and in this column next month.

Next year's Annual General meeting is likely to be held in the Northern branch following a recommendation from this year's AGM.

Please note that the address of the Tasmanian Division is now that of the new Divisional Secretary, Barry Hill VK7BE (see page 56), and amend your records accordingly.

ar

How's DX?

Stephen Pall VK2PS*

A few weeks ago I received a letter from an amateur who wanted some QSL information. The style of the signature and the style of addressing the hand-written envelope indicated to me the writer was an "old-timer". Among other things, he wrote: *"I have only returned to active hamming in the past twelve months, and my preference is CW by hand-key, on 40 and 20 metres. I am still bemused by the call signs of the new countries."*

Having read his letter, I knew that he was a true old-timer, not only in age but also in amateur practice. He is not the only one who returns to an old hobby. As time goes by, many formerly active amateurs who have been inactive for many years due to marriage, raising a family, forging a career in their vocation, etc, will return to amateur radio because of changed circumstances in their personal life. Retirement, redundancy, unemployment, divorce or death of the partner, and so on will create more "free" time, and a chance for new directions such as taking up the "old hobby" under new and changed circumstances.

Adjustment to the new world of amateur radio will not be easy, and they deserve the support and assistance of those who remained active on the bands.

World Telecommunication Day - AX2ITU

The special event station of the NSW Division of the WIA will be active on 17 May 1997 from 0001 to 2359 local time.

As a result of my submission to the SMA in February, and that of the WIA-SMA

liaison team earlier in December, the SMA has granted the use of the special call sign AX*ITU (* representing the State identifier) to all Divisions of the WIA requesting it. There will be only one special event station per Division (State) and that station has to be sponsored by the respective state Division of the WIA.

The special stations celebrate the establishment of the International Telecommunication Union (ITU), one of the United Nations agencies, which will be 132 years old on Saturday, 17 May 1997.

The ITU was founded in Paris in 1865 as the International Telegraphic Convention and changed its name to ITU in 1947. Its headquarters are in Geneva Switzerland. The organisation is the world regulator of international use of telegraph, telephone, radio and satellite communication services. It is the ultimate "Boss" of the amateur radio service around the world.

It is hoped that all the seven Divisions of the WIA will take up the challenge to activate their own AX*ITU station and will provide QSL cards to acknowledge the contacts made within and outside Australia by appointing special QSL managers to handle the task.

QSL cards for AX2ITU will go the QSL manager VK2PS at the call book address or via the VK2 QSL Bureau.

Yemen - 701A - and DXCC Status

The following news was released by the DXCC Desk of the ARRL on 5 March 1997: *"Questions have been asked about the*

status of the 701A operation from Aden, Yemen. ARRL HQ has been in communication with the Ministry of Communications, resulting in the following information: The Ministry of Communication in Sana'a, capital of Yemen, has advised us by both fax and telephone that, while it is aware of a document issued by its Aden office, the Ministry of Communication in Sana'a, the main body responsible for communications, had never issued an official authorisation for Amateur Radio.

"In accordance with this communication, the 701A operation cannot be accepted for DXCC credit."

Rotuma - 3D2AG/P

I recently received a lengthy letter and some photographs from Antoine 3D2AG, detailing his activity as a portable station on the Island of Rotuma.

Antoine DRN Yeurt is a marine biologist, who is working towards his final degree connected with his university studies. He also happens to be a well known DXer. Antoine started visiting Rotuma in July 1991, when he spent one month on the Island using the call 3D2AG/p. Further time was spent there in December 1991, December 1992, March 1993, and September 1993 to February 1994. His latest trip was from November 1996 to January 1997. All these visits were connected with his profession and amateur radio was an "attractive second activity".

Let's share some parts of Antoine's letter, full of practical information should you

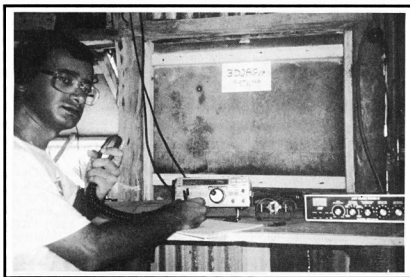
decide to undertake an individual DXpedition to the island.

"The island of Rotuma is historically a part of the Fiji Islands. It is 400 miles north of Fiji (12°30'S and 177°E), and its relative isolation resulted in a population and culture distinctly different from any other Pacific island. It is nine miles long and three miles wide and has a population of about 3000.

"The island gained separate DXCC status in 1988, following the 3D2X activity of two weeks, with some 34,688 QSOs. Since then, a number of other amateurs have visited the island, including Ron ZLIAMO, the late "Bing" Crosby VK2BCH, etc, but there are no permanent radio amateurs on Rotuma to date.

"Foreign visitors to Rotuma first need an entry visa and, if amateur, need to obtain in advance a Fiji 3D2 licence and import permit for their equipment. Since Rotuma is politically part of Fiji, the 3D2 call is valid both in Fiji and Rotuma. However, one must bear in mind that tourism is neither encouraged nor catered for on Rotuma, in a bid to protect the traditional Rotuman culture and safeguard the pristine natural environment.

"Access to the island is limited, being restricted to weekly 25-seater flights from Suva and an irregular boat visit every two



Antoine 3D2AG in his Rotuma "shack".

Suva and an irregular boat visit every two months or so. The plane trip takes about two hours, while the boat takes two days. There are no regular hotels on the island and, in order to live there, one must know a family beforehand, and bear in mind that this is not a money-oriented society. In fact, all food except tea, sugar, etc is locally grown, and most islanders are occupied on their family plantations, where the fertile soil yields an abundance of root crops and tropical fruits. Hence, visitors to the island should either adapt to the local diet, or rely on expensive food imported from Fiji.

"The "capital" of the island is Ahau, where the local council, post office, police station (two policemen) and hospital are found. Unless they are there for a short holiday, foreign visitors should consult with the District Officer in Ahau to formalise their purpose of stay. There is no power supply on Rotuma, and many families rely on small petrol generators, or, alternatively, some villages have a communal diesel generator. However, in order to have a reliable source of power, one should take one's own generator, or use solar panels with a 12 V battery (the option I took).

"During my November 1996 to January 1997 visit, my base location was the small village of Fapufa, located on the south-west coast. This village consists of three houses and a church, and is the smallest and most isolated village on the island. Also, it is one of the best DX locations. The "shack" consisted of a palm-frond hut, with provisions for a bed and operating table inside. The shack is located about 10 metres from a beautiful white sandy beach and crystal-clear lagoon.

"The antenna system consisted of a Hustler 4BTV vertical for 40-10 m and a

dipole antenna, strung between two coconut trees, for 80 m and the WARC bands. Unfortunately, the Cushcraft A3 tri-bander left earlier by the 3D2XX operation was no longer present, so it was very difficult to operate under the poor propagation conditions using only a vertical antenna and barefoot power. I used a Yaesu FT-757GX transceiver, coupled to a MFJ-941C antenna tuner and a Bencher CW key. Power was supplied by three 12 V/3 A solar panels connected to an N70 car battery, and the set-up worked very well. Needless to say, there is plenty of sunshine on Rotuma."

Antoine continues: "A total of 3,120 QSOs were made over a period of 42 days, with about 70% on CW and the rest on SSB.

"Overall, the expedition was successful, and it is hoped that many amateurs got a "new one" as a result. Next time, I hope to be able to take a beam antenna to the island, should someone be kind enough to assist me in getting one. My stay on the island also revealed to me the beauty and fragility of the Rotuman natural habitat, which is best kept in its present pristine state. The mainly Polynesian population is extremely kind and friendly, and crime is practically non-existent on the island. In order for this paradise-like situation to remain, it is imperative to restrict uncontrolled access to the island by western civilisation. For us amateurs, this would mean careful planning of our activities and behaviour, so that any future DXpedition would leave as little negative impact as possible on the islanders' way of life. In so doing, Rotuma will hopefully remain the tropical paradise and rare DX country it presently is."

So concludes Antoine's most interesting and informative letter.



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Huang Yan Dao - BS7H

According to previous news, this activity will take place in the first week of May 1997. Tim N4GN, in a news release, said that planning for the DXpedition to Huang Yan Dao (Scarborough Reef) is proceeding on schedule. Several team members, including Wang BA1OK and Kan JA1BK, met recently in Guangzhou to finalise all details regarding the ship with Captain Wang Jian-Xi and his crew. Arrangements were also made for generators fuel, food and the numerous other supplies necessary to ensure the success of the operation.

The following amateurs will be in the team of operators: Wang BA1OK (team leader), Gong BA1DU, Chen BA4RC, Wang BD4RX, Jian BD7JG, Zhang BG7KW, Kan JA1BK, Kazuo JA1RJU, Wayne N7NG, Jim W6EU (ex-WA6AE), and Bob W6RGG. QSL via Kan JA1BK.

Tunisia - TS40A

Tunisia is celebrating it's 40 years of independence during the period of 10 April to 10 May with a special event station. Delegations from various amateur radio clubs, including the German DARC, will participate in the celebrations. During the last week of March, 3V8BB operated as TS8A to celebrate the eight years of the presidency of Mr Ben Ali, the President of Tunisia.

The newly founded Association of Tunisian Radio Amateurs (ASTRA) is applying to the IARU for membership. There is a possibility that Tunisia will be represented in Friedrichshafen, Germany at the traditional "Ham Radio 1977" Fair in June. In the meantime the DARC foreign department is co-ordinating the schedule of guest operator activity at 3V8BB.

Future DX Activity

* Five German amateurs will be visiting the Faroes(OY) between 7 and 20 June. They plan to operate on 160-10 metres using a variety of antennas (dipoles, verticals and Beverages). Look for the following call signs and operators: OY/DK6QW Michael, OY/DF8QJ Claus, 3Y/DL3QQ Joerg, OY/DL4YBZ Werner, and OY/DL7YFB Reinhardt. QSL for all the activity goes via Alfred DK4QQ.

* Peter ON6TT has returned to his job in Uganda and was heard as 5X1T.

* DJ0PJ will be active as FY/DJ0PJ from French Guyana until 6 May on 10116, 14060, 18080 and 21060 kHz.

* After three years absence, PZ1BS is active again from Suriname.

* Mike XU6WV is active from Cambodia on 3512, 7004 and 7007 kHz. QSL via KOTLM.

* If you are lucky, you might catch Pierre



The Hustler vertical antenna on top of an ironwood tree at Antoine's 3D2AG Rotuma QTH.

HB9AMO operating from Kinshasa, Zaire as 9Q5BQ, on CW on 20 metres. QSL to home call.

* Desmond ZD7DP is active from St Helena on 80 metres from the end of March with an inverted-vee and 400 W.

* HB5CC is a special event station on air from the 1 April until 31 October. It is being operated by the ARC of St Gallen to celebrate the 50th anniversary of the foundation of USKA, the Swiss National Organisation for Amateurs. QSL via HB9BCK.

* Ray ZD7RH is a newly licensed station on St Helena Island, active on 20-10 metres with an FT-101E and wire antennas.

* Piero IK2BHX will be back in Zaire after Easter and hopes to be active again as 9Q5HX for six months. QSL via IK2MRZ.

Interesting QSOs and QSL Information

* 9K2GS/NLD - Abdul - 14200 - SSB - 0557 - Feb (E). QSL via WB6JMS, James L Arther Jr, POB 84, Atwood, CA-92601, USA.

* J43CRN - Kosta - 14195 - SSB - 0606

- Feb (E). QSL via SV3YY, Kostas Nikola Kopoulos, PO Box 1236, GR-26332, Patra, Greece.

* 5Z4FM - Jim - 14166 - SSB - 0610 - Feb (E). QSL via Bureau or via CBA, Cecil James Stewart, PO Box 34168, Nairobi, Kenya, Africa

* JY9QJ - George - 14030 - CW - 0634 - Mar (E). QSL via DL5MBY, Ullrich Helger Appenzeller Str 53, D-81475 Munchen Germany.

* 7X4AN - Mohamed - 7008 - CW - 0717 - Mar (E). QSL to Mohamed Boukhar, PO Box 263, Zeboun, 13200 Tiemcen, Algeria, Africa.

* N4BQW/KH4 - Chuck - 14215 - SSB - 1148 - Mar (E). QSL via WA4FFW Mark D McIntyre Sr, 2903 Maple Ave, Burlington, NC 27215, USA.

* GD3AHW - Rip - 7004 - CW - 1823 - Mar (E). QSL via the Bureau.

* 8Q7BE - Hans - 14019 - CW - 1023 - Mar (E). QSL via DL8NBE, Hans Joachim Ingenhag, Grabinger Weg 8, D-97618, Unslben, Germany.

* FO0SSJ - Jim - 14164 - SSB - 0514 - Mar (E). QSL via K8JRK, Gerald C Totten, 5346, W Frances Road, Clio, MI 48420, USA.

* FR5DD - Jean - 21020 - CW - 0527 - Mar (E). QSL via (CBA) Jean Piarat, 8 Ave des Bandamiers Les Filaos, F-97434, Saint Gilles de Bains, France.

* 9M6TCR - Charlotte - 21202 - SSB - 0648 - Mar (E). QSL via KQ1F, Charlotte L Richardson, 11 Michigan Drive, Hudson, MA 01749, USA.

* K8VIR/ZL4 - Ed - 14222 - SSB - 0555 - Mar (E). QSL via Ed Hartz, PO Box 9, Te Anau, New Zealand.

From Here and There and Everywhere

* Merv VK4DV is "tickled pink" or, as he puts it, "I am like a dog with two tails at the moment". To understand Merv's joy, one must think back to the first activity of XY1HT from Myanmar. The Union of Myanmar (formerly Burma) was established officially in 1974 and amateur radio was banned. The first authorised operation of XY1HT as a demonstration station took place on 19 September 1994. Thirteen CW/SSB QSOs and four SSTV QSOs were made, all with East-Asian stations, except one. Merv VK4DV contacted them at 0725 UTC on 14 MHz SSB and received a report of 54. It took him almost three years before he was able to secure a QSL card for this historical occasion. Finally his prayers were answered. He received a card via Ray, one of the operators, who is now active in Malaysia as 9M2/G3NOM. Writes Ray to Merv: "I am sorry you have had to wait, but at least it is an

historic QSL, because you were the only contact outside East Asia". Congratulations Merv, well done!

* V14BEF and V14MOO were special event stations operated by the Rockhampton Amateur Radio Club during the month of April, on the occasion of the "Beef Festival" which is held every two years in that city. QSLing will be automatic via the QSL bureau.

* Percy VK4CPA (formerly VK3PA), the originator of the ANZA Net, started conducting the net on 20 May 1970, twenty seven years ago, on 21300 kHz, later moving to 21205 kHz. The net has operated since without any interruption. During the past three years the net opened up a secondary frequency on 14164 kHz, due to deteriorating propagation. It is active each day at 0500 UTC. Percy is in reasonable health despite a few health scares in the past two years. He is getting assistance in conducting the net from other willing helpers from Australia and New Zealand, but the strain of operating the daily net (or supervising when others are conducting it) does show up. He told me recently that he does not think he will last longer than two more years. Percy will be 88 years old this year and many of his friends, both in Australia and overseas, wish him continued good health, perseverance and a long healthy life. Please read the special article about this remarkable gentleman, in the true sense of the word, in the September 1990 issue of *Amateur Radio*.

* There are still quite a number of very honourable QSL managers. Bruce BV2KI has returned the IRCs and "green stamps" to Hans, SWL40370, because Bruce, for a variety of reasons, was late sending the BOOK QSL card.

* A fax received by Austin VK5WO from DXCC indicates that there is no further news about Mani's activity on Andaman Island. Mani VU2JPS had been asked by the Indian Government to suspend operations pending further clearances. At present, the VU2JPS cards are not accepted for DXCC purposes.

* The DXCC received 252 applications (24,436 QSLs) for endorsements and new awards during the month of February.

* According to a small item in the 3 April issue of the *Sydney Morning Herald*, Tom Christian (also known as VR6TC), the great-great-grandson of the *Bounty's* Fletcher Christian, is in Australia seeking help to have an airstrip built on remote Pitcairn Island. Its population of about 200 in immediate post-war years is down to 40 and Tom thinks air access would boost tourism and keep young people from leaving. Tom says that if the population falls further, there won't be enough men to do essential work, and the island might have to be abandoned. Tom

wants to take a civil engineer back to Pitcairn to survey a runway of at least 2000 feet, which would allow an air link to Mangareva to the north-west and thence to Papeete. Aviator-adventurer Dick Smith (also known as VK2DIK) will pay the cost of getting the engineer to and from Pitcairn by ship and will help raise the money to build the airstrip.

* Alan VK4AAR is now the QSL manager for Frank YJ8AA.

* Ed K8VIR/ZL4 was active from Auckland Islands for a number of days early in April. He was part of a scientific expedition, therefore his amateur activity was limited. Despite all this, he regularly checked into the ANZA Net on 14164 and appeared also on the IOTA frequency of 14260 kHz. He prefers that QSLs from the Pacific Region should be sent to his New Zealand address, Ed Hartz, PO Box 9, Te Anau, NZ. Cards from the rest of the world should be sent to his home call address in the 1997 Call Book. He used two call signs, K8VIR/ZL9 and ZL9DX.

* The short DXpedition to St Peter Island, VK5ISL, was a success. Around 2000 contacts were made. A detailed report will follow in later issues.

* The WIA Victorian Division, and the WIA Queensland Division, announced world-wide that they are the only IARU recognised QSL Bureaux in the VK3 and VK4 call areas. Cards via the Bureau system should be directed to the addresses below. Any other Bureau operating in the VK3 and VK4 call areas is privately operated and has no association or distribution agreement with the WIA. The VK3 and VK4 Bureaux will not process cards from, or to, any private bureau operating in the respective call areas. The inward official Bureau addresses are as follows: VK3 - Box 757G, GPO Melbourne, VIC 3001; and VK4 - Box 638, GPO Brisbane, QLD, 4001.

* The well known DXer, Wayne Mills N7NG, has been appointed by the ARRL President as Chairperson for the DX Advisory Committee. Incidentally, Wayne will be one of the operators in the next Scarborough Reef activity.

* Mamuka 4L2M, President of the National Association of Radio Amateurs of

Georgia, advises that the following call signs are pirate stations: 4L2DX, 4L3Q, 4L44N, 4L50K, 4L55K, 4L6HMC, and 4L7F. All Georgian amateurs are using the 4L prefix and have only two letters in the suffix with one number. Extra class amateurs and club stations have one letter in the suffix with one number. The new address of the Georgia QSL Bureau is: PO Box 123, Tbilisi 380004, Republic of Georgia.

* Larry F5PYI has announced that he is the QSL Manager for George 9J2GA in Zambia. He has the right to answer past dated QSOs but he will confirm those QSOs first via packet with George.

* Stations active from Kure Island (OC-020) will have the letter K as the first letter of their call after the prefix, ie KH7K**.

* Peter ON6TT says Yaesu are sponsoring the TOOR, TOOR/mm and VK0IR colour QSL cards which are being printed in Germany.

* Six new licences have been issued to local operators in Mali (TZ) but Yatt TZ6HY is the only one active on the bands. A club station is being built to enable other members without equipment to be on the air. QSLs to TZ6HY go direct to: BP 395 Segou, Mali, Africa. To confuse the issue, another DX publication gives Yatt's address as: BP 8044 Bamako, Mali.

* Lithuanian amateurs are now permitted to operate on 1810-2000 kHz CW and 1840-2000 kHz SSB.

* It has been reported that Chris ZS8IR has left Marion Island and returned home.

* Dan N9XAG/XT2DP has returned home from Burkina Faso. QSL via WB2YQH.

* Eric FT5ZG is a regular on 7004 kHz at 1730 UTC from Amsterdam Island. His QSL manager is F5RQQ. QSL via the Bureau to the manager or direct to F5RQQ, Jean Mare Vigier, 4 IMP Des Lys, 63800, Cournon D'Auvergne, France.

QSLs Received

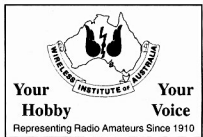
TR8XX (4 m op), FWZOI (4 m DJ401), T88T (4 m N50K), KC6AA and V63CQ (4 w JA6CM), BOOKS (8 m BV2KI), 3V8BB (3 m DL2HBX).

Thank You

Many thanks to my amateur friends whose assistance is a great help in compiling these notes. Special thanks to VK2XH, VK2KFL, VK2TJF, VK4DV, WIA L40370, VK5WO, VK6LC, 3D2AG, K8VL/ZL4, ARRL DXCC, The *Sydney Morning Herald*, *INDEXA*, *QRZ DX*, The *DX News Sheet*, The *425 DX News* and the *GOLIST QSL Managers List*.

*PO Box 93, Dural NSW 2158

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International Amateur Radio Union Monitoring Service (IARUMS) – Intruder Watch

Gordon Loveday VK4KAL*

Region 3 Monitoring Service News

In the main these notes are taken from the Region 3 February summary.

Amateurs in Northern parts of Australia are being hard hit by constant intrusions emanating from our nearest neighbour, Indonesia. One experienced observer notes, "The 7 MHz band is getting worse, masses of high powered transmitters make amateur radio operations impossible". Another source notes that all DX signals are obliterated and asks, "When can we see a stop to this horrendous intrusion on our amateur bands?"

The answer to this question is that a decrease of intruding signals **cannot** be expected until Indonesian authorities can get on top of unlicensed transmitters. Indonesia is made up of many islands and an Indonesian official told me that to mount a concerted effort against these transmitters would

present the administration with a huge co-ordination problem.

The best form of defence, therefore, would seem to be continued harassment of the unwanted signals in the portion of the band which you wish to use. Indeed, some VK and ZL operators are becoming very adept at this unwanted skill. Other possible aids are maybe the use of directional antennas and to employ filtering systems.

The Indonesian problem will be among those to be raised at the forthcoming Region 3 Conference in Beijing.

Monitoring Service Update

As conditions improve, so do the number of intruders reported. Voice nets and links, illegally operating on most bands, seem to be the main problem we face. These unlicensed operators have been the subject of many investigations and their origin is well known to the monitoring services in our region. The

only defence we have is to attack by trying to drown them out and interfere with their communications.

At each triennial regional conference this problem is brought to the attention of those attending. The promises of action are many, but sadly the number of intruders of this type seem only to proliferate. All is not doom and gloom, however. We do have some successes in removing broadcast stations, particularly when the station engineers are made aware that they are causing problems. Other Government type stations are also prepared to move when they are presented with overwhelming data from the various monitoring stations.

So, keep the reports coming in – they are our best form of ammunition

Stop Press

A note to hand from the DARC MS, ex TRT Ankara about changes to their 500 kW transmitters as of 27 Jan 97. The transmissions previously on 7.100 MHz have now been re-located to 7.300 and 8.040 MHz, so they are no longer intruders, provided they stay on frequency.

*Federal Intruder Watch Co-Ordinator: Freepost No 4
Rubyvale QLD 4702 or VK4KAL@VK4UN-1

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Over to You – Members' Opinions

All letters from members will be considered for publication, but should be less than 300 words. The WIA accepts no responsibility for opinions expressed by correspondents.

A CW Only Licence?

Like Greg Short VK6JK (March *Amateur Radio*), for many years I have followed the for-and-against CW arguments. Recently I had a letter from Daniel Bischoff, FISVE. He saw my article **Morse Not Required** (*Amateur Radio*, May 1995) and he asked the WIA for permission to translate it and offer it for publication in the French ham magazine *Radio REF*. Permission was readily granted. Daniel did the translation and then he got cold feet.

Daniel hasn't taken the French Morse test and operates on 144 MHz and above. Consequently, he felt that he had no credentials to criticise the requirement of the Morse test. Furthermore, a year or so ago the *Big Brass* (sic) in France declared the Morse test sacrosanct and was not to be questioned. Daniel thus thought it likely that my article would be rejected.

Undeterred, Daniel has started learning Morse on his PC. Then, as he says, "...I shall redirect my guns on those who insist to keep the Morse test." Daniel is 61 and an

electronics engineer and became a ham three years ago. He says that "...some good 'souls' made me understand that one becomes a real (true) radio amateur only if one can work the decametre bands." So he tried to learn Morse but laboured under heavy handicaps: "...age, ears injured in military service and a total lack of dedication!" Thus he exclaims, "Why on earth do you have to know CW to be allowed to go around the world on decametric bands? When I can do it by satellite without knowledge of CW." Daniel felt that my article gave him a good answer. Daniel can be contacted by satellite or on e-mail: svedan@worldnet.fr

But where has all this CW chat got us? Or perhaps, more correctly, where is it supposed to be getting us? What is it that we seek? Quite frankly I'm not sure any more. In 1995 I was a zealot in the cause of scrapping CW as a mandatory requirement, but now I lean towards the notion that so long as the air is alive with CW an examinable provision is essential.

Are there snags with the idea of licensing

people purely for CW operation alone? Certainly it's much cheaper playing about with CW and a rich field to plough for QRP enthusiasts. But is a pure CW licence a reasonable proposition?

Bob Hawksley VK2GRY
21 Wallumatta Road
Newport NSW 2106

Clandestine Radios

The writer is researching the history of the clandestine radios used by SOE and other secret intelligence organisations during WW2.

Significant quantities of two models, the Type 3 Mk 2 and Type "A" Mk 3, found their way to this part of the world and, after the cessation of hostilities, through government disposals mostly into the hands of equipment starved amateurs of the day.

Just how many came to Australia is one question of interest. If you possess either of these models I would greatly appreciate it if you would let me know the types and serial numbers of your equipment. In the case of the

Type 3 Mk 2, in addition to the stamped number on the receiver front panel, I would also like to know the numbers which can be found pencilled on the receiver and transmitter chassis, sometimes with some initials alongside (probably the wiring inspectors). It is believed that these pencilled numbers are the true chronological production numbers, whereas the external stamped number was arbitrarily inflated in order to confuse the enemy when equipment was captured.

As an example, a Type 3 Mk 2 which I am presently restoring bears the external stamped serial No 45975 and has the much more realistic pencilled numbers of 2107 on the transmitter and 1801 on the receiver.

If you once owned any of this equipment that you know has been scrapped, advice of this would also be useful in order to help build the complete picture.

Bill Scovell VK2KFE
13 Tulani Avenue
Daleys Point NSW 2257

Morse an International Language?

How often have we heard that Morse is an international language? This was recently paraphrased by K Gerhardt in March *Amateur Radio*, where he stated, *inter alia*, "All people in different countries with different languages can communicate effectively in Morse, as pronunciation of words is not relevant".

What a load of rubbish! Does he honestly mean that, if he was sent a message in Greek, Russian or Kata Kana Japanese, he would clearly understand it? If he does, then I congratulate him, but fear he must be a rather lonesome operator.

Please, no more of this nonsense. Morse is a method of communicating in a number of languages. But the sender and receiver must both be competent in the language used or the message will be incomprehensible.

On second thoughts, one could bump up the power several thousand watts; that was the way to get terrible ignorant foreigners to understand English—shout at them!

If Morse is so vital to emergency communications, why don't the emergency services use it, or at least have the equipment for use when necessary? Let us be honest. We are hobbyists and, like all good citizens, we help out as best we can when needed. Neighbours may drive ambulances or help feed evacuees, but does this mean they should have some special qualification? No, each helps out in a manner best suited to their ability and this is as it should be with amateur radio operators.

In the distant past there may have been a need for proficiency in Morse but that need

has long gone with the Dodo and the Latin language. Nobody has suggested that those who wished to should not study Latin, nor has it ever been suggested that those who wished to use Morse should not do so.

Compulsory proficiency in Morse makes as much sense as compulsory proficiency in Latin.

D Palmer VK2TMP
20 Elm Street
Tamworth VIC 2340

Morse Gone but Not Missed

The use of Morse code at sea has almost disappeared and will have been totally phased out by 1999. At that time all ships will have to be fitted with radio communications fitting the GMDSS standard. This standard takes into account the area in which the ship operates, distance from shore and her size.

In the latter half of 1996 we saw the performance of the equipment specified by GMDSS when four yachts were found in the Southern Ocean. These boats were dismasted and upside down, the crews very cold and wet. I have done drills with survival suits similar to the gear worn by these survivors and I can assure readers that operation of a Morse key in the conditions these guys found themselves in is totally impossible.

Safety considerations aside, there are strong economic reasons Morse is disappearing very quickly. They are cost and convenience. The ships I work in are fitted with satellite systems, usually Marisat "C". The latest satellite system that I am aware of is Marisat "M". This works at up to 64 kbits/sec and it is possible to transmit video over the link. You can imagine the advantage of showing the manufacturer a picture of some malfunctioning equipment while being miles away, possibly at sea.

MARISAT "C"

This is basically packet radio at 600 bits/sec. The message is either to a fax or telex machine, Internet, ISDN, or another Sat "C" installation. We use a type approved notebook computer and Thrane & Thrane transceivers. The antenna is about the size of two three-inch flower pots stuck open-ended together. In the trade journals a Sat "C" station will cost you from about \$5,000 to

\$10,000. Incidentally, there are a large number of trucks using this system to keep in touch with their head offices automatically. It is possible to have the GPS and engine log attached to the Sat C so the boss knows where you are and how your truck is, and tell you where to go next without the driver having to do anything other than read the printout.

Our provider's price lists are in three books about 2" thick each, so I have used messages to Australia as a guide. Basically your message goes to a land station (Perth) and then by land-line. Land-line charges can be extra if the address is overseas. This means the price is hard to work out here, but the relative price will be quite accurate in the following example:

Costs

Current prices (as at February 1997): 1 SDR = \$US1.51 and 1 Gold Franc = \$US0.49.

Marisat A	TLX	SDR2.85/min
	TF & Fax	SDR3.752/min
Marisat B	TLX	SDR2.476/min
	TF & Fax	SDR2.47/min
Marisat M	TF & Fax	SDR2.66/min
Marisat C	TLX	SDR0.57/kbit
	Fax	SDR0.57/kbit
	Data	SDR0.57/kbit

HF Services:

Telex over radio	4.66 Gold Francs/min
Radio Telephone	5.25 GF/min
Telegraphy (Morse)	2.33 GF/word

A Sample Message

What does this mean in dollars? A fax using Sat "A" is about \$AUS10.00/page. A telex message using Sat "C" and five bit Baudot is about 0.5 cents/character. Sat "B" and "M" are cheaper because the speed is higher. Morse telegraphy is \$1.46 a word of 10 characters or less.

Using the last paragraph as an example, we have 215 characters and 49 words. To transmit it by Sat "C" would cost approx \$1.10 plus \$0.60 confirmation, if requested. However, the Morse telegram would cost about \$71.00.

Do you really believe that Morse is going to survive in the real world?

Steve Truscott VK2SPT
158 Regal Way
Valentine NSW 2280

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**Have you advised the WIA Federal
Office of your new call sign?
Use the form on the reverse of the
Amateur Radio address flysheet.**

Pounding Brass

Stephen P Smith VK2SPS*

There has been a lot of discussion lately in relation to the beginning of Solar Cycle 23. Some believe it has already started, whilst others believe it will commence in the latter part of this year. However, it doesn't really matter who is right or who is wrong; what does matter is that band conditions are gradually improving, resulting in more contacts, both local and overseas, which brings me to the issue of operating practices.

Operating Practices

One of the most important pieces of advice I ever received in relation to sending Morse over the air was to **listen, listen, listen**. It is better to take a couple of minutes to listen to the band before jumping in head first and calling CQ. Listening gives you the feel of the band; it tells you where the majority of signals are coming from, whether they are local or overseas, whether there is QRM, QRN or QSB. One can learn a lot by just taking the time to listen.

At one time or another in our operating career we have tuned up on frequency without listening and blindly called CQ, only to be politely told at the end of the call to QSY by an irate operator with whose contact you have doubled. So that the above situation doesn't happen to you, find a frequency you believe is clear, by listening first, and then send QRL (is this frequency clear). If there is no response, it's safe to assume the frequency is clear and you can proceed with your call.

There are two ways to initiate a contact. You can transmit a CQ call, or you can answer someone else's call. If you are a beginner to the band and feel a little nervous about sending your first call, don't worry; it's better to answer someone else's call than sit back and do nothing. Then, as your confidence and operating ability increases, your nervousness will be a thing of the past.

Whether you send or answer a call, be brief in your response. Use the recommended 3x3 call as laid down by the SMA in their regulations booklet.

To the beginner I recommend you stay with the 3x3 call as mentioned above, although you will hear stations shortening or lengthening the standard 3x3 call. Short calls have merits under certain circumstances, but long calls don't! Avoid picking up bad habits from other operators. If in doubt, use a 3x3 call.

Short Call

A short call is only recommended for contest situations, or under very good

propagation conditions, especially on bands above 30 MHz where conditions can change within minutes.

For example: CQ test de VK2SPS **AR**

or: CQ CQ de VK2SPS **AR**

*Contest is abbreviated to test. **AR** = end of message (more on this later).*

Long Call

Anything greater than the standard 3x3 call is not recommended. It just wastes time and reflects on one's operating ability as a poor operator. I once counted 18 CQs in one call from a JA station.

Answering a Call

Send the station's call three times, followed by DE, then your call three times, followed by **AR** which signifies end of message.

For example: JA1XX JA1XX JA1XX de VK2XX VK2XX VK2XX **AR**

The line under **AR** signifies no break between the A and R; when sending, it should be sent as one letter.

Some operators substitute **AR** for **KN**. This is incorrect as we haven't yet established contact. Once contact is made and the QSO is in progress, **KN** can be sent. **KN** signifies that only that station should respond to that call.

Once contact is made, it is customary to send name, QTH and signal report on the first over, and rig, antenna and weather on the

next. Some operators send the above all in one over. It really depends on conditions at the time. Common sense dictates that the information should be sent in order of importance. Having exchanged the information with the other station a decision has to be made whether to continue the QSO or terminate it. To continue with the QSO you can talk about virtually anything, limited only by your imagination.

To terminate a QSO, it is better to follow the correct procedure by using SK. This signifies the end of the QSO.

For example: SK JA1XX de VK2SPS **EE**

The double E represents cheers, and is responded to with a single E. This practice is very common on the bands today.

If you want to go QRT, then you finish with CL, as this lets everybody know that you are clearing the frequency and don't want to make any more contacts.

For example: SK JA1XX de VK2SPS **CL EE**.

Some operators persist in calling, even after hearing the CL, just to make a quick contact or to add to their DXCC tally. Respect the operator's wishes and let him go; he/she will be on frequency another day.

Summary

1. Listen to the band first.
2. Find a frequency you think is clear.
3. Send QRL?
4. If no response, send CQ.

See you next month with abbreviations used in QSOs.

*PO Box 361, Mona Vale NSW 2103

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Update

The Heard Island Experience

I find that one of the easiest errors to make when preparing copy for *Amateur Radio* magazine is dyslexia of the fingers when keying in call signs. Such errors are also the hardest to pick up during proof-reading.

Also, a cardinal rule is that, if any errors are going to sneak through the system, at least ensure they do not occur on the front cover or in a prominent part of the lead article.

Who was it who said that rules are there to be broken? Unfortunately, the reversal of two

letters changed David Muller VK2JDM's call sign into VK2JDM in two major places in last month's *Amateur Radio*. Not only in the caption to his photograph at the head of the article on page 7, but also on the front cover!!

My humblest apologies, not only to David VK2JDM, but also to Jim, the real VK2JDM.

It might be a good idea to correct your copy of the April 1997 issue of *Amateur Radio* now.

Bill Roper VK3BR

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Your
Hobby

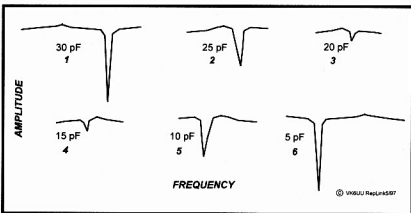


Your
Voice

Representing Radio Amateurs Since 1910

Repeater Link

Will McGhie VK6UU*



COMMERCIAL CAVITY FILTERS

Any amateur who has been involved in the construction and management of repeaters is most likely to have come across commercial cavity filters. In particular, the VHF type that tune to our two metre band. These high Q

filters, which stand some 0.6 m (2') high, are a basic requirement for most repeaters, even those using split antennas. The filters help to prevent the repeater's transmitter from interfering with the repeater's receiver. Also, cavity filters can greatly improve the repeater receiver's rejection of other signals, such as pagers.

OPERATION

When cavity filters are used they can be configured to operate in two different modes. The first is as a band-pass filter. RF is fed into one connector and coupled through the filter to the other connector. Frequencies away from the frequency to which the cavity filter is tuned are attenuated. The further away the greater the attenuation. However, even in such a high Q filter, the amount of attenuation 600 kHz away (the repeater split on two metres) is only about 10 dB. For a 600 kHz split two-metre repeater to work, about 100 dB of attenuation is required. This would require 10 band-pass cavity filters, all connected in series. Ten filters per port are required for the repeater's receiver and transmitter, a total of 20 filters.

The loss per cavity is about 0.5 dB making a total of 5 dB loss in the receiver and transmitter of the repeater. As you can see, the band-pass mode of a cavity filter is not suitable with 600 kHz split two-metre repeaters. Twenty cavity filters make for a big duplexer.

The second mode of operation of a cavity filter is the notch mode. A capacitor or inductor is connected between the input and output connector of the cavity filter and the RF signal applied in the same way as the band-pass mode. The correct value of capacitor, added between the input and

output connector, results in a very sharp notch 600 kHz down from the pass frequency.

The inductor produces a notch 600 kHz above the pass frequency. This notch is typically 35 dB down 600 kHz away. When cavity filters are used in this mode, only three are required to produce the required 100 dB of attenuation. A total of six cavities is required for a duplexer, three in the receiver and three in the transmitter.

DISTANCE APART

The difficulty with some commercial cavity filters is the distance apart of the input and output connectors. For 600 kHz separation, the inductor used to produce the notch above the pass frequency is a straight piece of wire soldered directly between the two connectors. However, the connectors have to be 64 mm (2.5") apart to produce the correct value of inductance. If the connectors are closer together this is not a problem, as the wire can be bent. But if the connectors are further apart than 64 mm, there is difficulty in reducing the resulting inductance and hence how far away the notch is. The larger value of inductance, due to the connectors being too far apart, results in the notch being greater than 600 kHz away.

This is a basic problem that is difficult to overcome in some commercial cavity filters. In some commercial cavities the input and output connectors are on opposite sides of the filter, while other filters have the connectors on the top. So, how can you use a cavity filter with the notch on the high side when the inductance, due to the distance apart of the connectors, is too high?

The answer is, like many problems, simple and not new. For some amateurs trying to modify commercial cavities, it may be what they are looking for.

Insert a capacitor in the wire inductor and cancel out some of the inductance. In effect, the length of wire becomes electrically shorter. The cavity's connectors may be too far apart but the series capacitor overcomes this.

DIAGRAM

The accompanying diagram will make all this clearer. The typical response of a cavity filter connected in notch mode is just that, a fairly straight line with a notch in it. The line is not completely flat but has a small broad peak where minimum attenuation occurs. This minimum attenuation point, and the notch point, have to be 600 kHz apart for two metre repeaters.

Let's assume the input and output connectors are more than 64 mm apart, as is the situation with many commercial cavity filters, resulting in the pass-to-notch

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frequency separation being more than 600 kHz. The addition of a 30 pF capacitor will reduce the frequency difference between these two points to, let's say, 700 kHz, and this is represented by drawing 1. As the capacitance is reduced, the notch moves closer to the minimum attenuation point and, let's say, is 600 kHz away as in drawing 2. Note, as the notch becomes closer to the pass frequency, the notch depth decreases considerably. This is the nature of cavity filters. The closer the pass-to-notch frequencies, the smaller the notch depth. Drawing 2 is now achieving the desired 600 kHz notch above the pass frequency, even though the input and output connectors produce a value of inductance which is too large.

Drawings 3, 4, 5 and 6 show how the notch moves from being above the pass frequency to below the pass frequency as the series capacitor is reduced in value. Drawing 5 represents the notch 600 kHz below the pass frequency, and drawing 6 represents, say, 700 kHz below the pass frequency.

COAX

I used a spectrum analyser to try this out and found the inductor could be coax. Place a T piece on both the input and output connectors so that a short length of coax can be used as the inductor between the input and output connectors. The length-cancelling capacitor is then inserted into the inner conductor of the coax. The advantage of using coax between the connectors is that there are no modifications to the cavity and therefore no need to open up the cavity filter. The outer braid is intact between the connectors; just open it up and insert the tuning capacitor.

The tuning up procedure I will have to leave to you, as I have used enough words just getting this far.

I hope this description, along with the simple diagram, is able to be understood. It is surprisingly difficult to put technical descriptions into words.

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Spotlight on SWLing

Robin L. Harwood VK7RH*

Sometimes I sit down at my computer and wonder what to write about in this monthly column. Usually there is a snippet of news that easily makes it, but there are times when it is difficult to find something worthwhile to report.

At present, there seems to be an air of gloom over the future of short-wave broadcasting from Australia. As you are aware, the Mansfield Report recommended that the ABC scrap its external radio and television broadcasting, to concentrate on domestic programming. Severe budgetary cuts were imposed on the ABC which required that the administrators look at ways to reduce the budget. Some thousands of employees were made redundant and some programming alterations have already been made, particularly to domestic radio.

The proposal to completely axe the external services seemed to win the endorsement of the Communications Minister, Senator Alston and some in the ABC hierarchy. However, it is apparent that there are quite a few loyal radio Australia listeners who are really worried that the short-wave service may be silenced. At the time of writing, a Senate select committee is investigating the future of the external services and the Minister was also reported in the *Sydney Morning Herald* as favouring a Radio Australia English service be continued via satellite but axing the various language services. It seems to have escaped the Minister's attention that satellite receiving equipment is not readily available to the public and what equipment there is, certainly is far more expensive than a cheap short-wave portable which is readily on sale in the targeted areas of Radio Australia.

The recent political developments within Papua-New Guinea which forced the resignation of the Prime Minister, Sir Julius Chan, following the use of mercenaries to reportedly train the troops to suppress the Bougainville uprising and the violent reaction of the PNG defence personnel to these events, clearly demonstrated the importance of Radio Australia's Tok Pidgin Service. News of the crisis was extensively broadcast from Melbourne as the local media was hesitant to become involved. I personally do not have audience figures but I would suggest that many in PNG and in the Melanesian region eagerly listened to what was happening via Radio Australia. And still largely rely on the service in the lingua franca of the region. Also, I believe that RA may be the sole international broadcaster in that

language. In fact, at the height of the crisis, RA came on in the morning with a special Tok Pidgin service covering the crisis. The service is easily heard here on 6020 kHz from Townsville and 6080 and 9710 kHz from Shepparton from 0800 till about 1200 UTC.

Whilst we are on PNG, the main national program from Port Moresby is also easily heard on 4890 kHz in our local evening hours and spasmodically runs throughout the night, depending on power availability. In the daytime it is also often heard on 9675 kHz. The various provincial stations are mainly heard on the 90 metre band, that is between 3.2 and 3.4 MHz, but these are mainly in local languages with occasional English identification. They mainly sign off at 1200 UTC. With the high levels of summer QRN behind us, it is now the best time to hear them.

Naturally we are now in winter and, down here in Tasmania, I am finding that the daylight hours provide the best listening on short-wave. The main broadcasting allocations seem to have signals there and it does not slack off until the local sunset. Around midday local time I do hear European stations come over the South Pole on 6 and 7 MHz and you can hear the distinctive flutter for about an hour until propagation changes from another direction.

Notice, too, that a prominent electronic short-wave store and publisher - Gilfer Short-wave in Parkridge, NJ, USA - has ceased trading. They published *Ferrell's Confidential Frequency List for Utilities* and it is a shame to see that disappear. Fortunately, the *Klingenfuss Utility Guide* from Germany is still in publication and will fill the gap because it is an annual publication compared to the CFL being somewhat irregularly produced.

Talking of publications, Bob Padula's *Electronic DX Press* has added a catalogue and product directory. Several overseas short-wave publications, including many from the Klingenfuss stable, are available as well as *The Australian Short-wave Guide*, which is out now. It contains details of short-wave stations broadcasting to this region up to October 31. Price of this is \$10 within Australia and \$12 in New Zealand. For further details write to Bob Padula, 404 Mont Albert Road, Surrey Hills VIC 3127.

Well, that is all for this month. Until next time, the very best of listening.

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VHF/UHF - An Expanding World

Eric Jamieson VK5LP*

All times are UTC.

VK Activity

Max VK3TMP at Somerville on the Mornington Peninsula had a variety of contacts during February. Here are some extracts from his log:

1/2:	1054	144	VK5AKK	5x3
	2308	144	VK6AS	5x2
2/2:	1338	144	VK5NC	5x7
4/2:	0945	144	VK7JG	5x9
	0950	432	VK7JG	5x2
8/2:	1211	144	VK5DK	5x7
14/2:	2320	144	VK5NC	5x9
	2323	1296	VK5NC	5x4
15/2:	2240	144	VK5NC	5x7
16/2:	2201	144	VK6AS	5x3
	1105	144	VK5KCA	5x7
	1215	144	VK5NC	5x9
	2154	144	VK5KCA	5x5
	1155	432	VK5DK	5x9
	1201	1296	VK5DK	5x6
17/2:	1012	1296	VK3ZQB	5x9
	1017	1296	VK5DK	5x1
18/2:	0907	144	VK7XR	5x9
	0930	432	VK7XR	5x7
	0934	144	VK7JG	5x3
	0933	1296	VK7XR	5x5
	0939	1296	VK7JG	5x3
19/2:	2152	144	VK7XR	5x9
20/2:	0926	144	VK7JG	5x7
	0930	432	VK7JG	5x2
21/2:	2201	144	VK5NC	5x7
23/2:	2231	144	VK5AKK	5x3
24/2:	0931	144	VK5MC	5x3
	0943	1296	VK3DEM	5x9
	1125	144	VK5KCA	5x5
25/2:	0937	144	VK5AKK	5x4
	0945	432	VK5AKK	5x1
	1001	144	VK5NY	5x5
	1008	144	VK5LP	5x1
28/2:	0916	144	VK5NC	5x1
1/3:	2150	144	VK2ZAB	5x2
3/3:	0957	144	VK5NC	5x1

It is an encouraging sign to see 1296 MHz contacts featuring more often in so many logs.

Ross Hull Log

Andrew VK7XR, at my request, sent a copy of his recent Ross Hull log, which covered the full period of the contest. What stands out in the listing of 356 contacts is the daily consistency of being able to work across Bass Strait to several stations in Victoria on 50, 144, 432 and 1296 MHz, with VK3DEM, VK3TMP, VK3ST and VK3XRS on 1296 MHz with signals at times to 5x9.

Without detracting from Andrew's daily operating schedules, the log shows that there are advantages in being relatively close to areas of high operating density.

Andrew included a summary of stations worked and these were: VK1 x 2, VK2 x 20, VK3 x 30, VK4 x 28, VK5 x 9, VK6 x 1, VK7 x 1, ZL x 14.

DXpedition

Jack Haden VK2GJH advises that he will be flitting between islands in the Pacific from June onwards, on the small inter-island merchant ship *M/V Maasmond* and will attempt to activate the following islands on six metres, from ashore, radio permission having been obtained for the callsigns to be used.

3D2JH	28/6 - 29/6	Rabi Island
3D2JH	01/7 - 02/7	Suva (Fiji)
T20JH	05/7 - 07/7	Funafuti
T30JH	11/7 - 13/7	Tarawa
T33JH	15/7 - 23/7	Banaba (Ocean Island)
T30JH	27/7 - 28/7	Tarawa
3D2JH/p	01/8 - 02/8	Rotuma Island
3D2JH	05/8	Suva (Fiji)

Equipment used will be an Icom IC-736 HF-plus-six-metres transceiver with 100 watts on all bands including six metres. A trap dipole will be used on 80 to 10 metres and a vertical on six metres. As work takes priority during the trip, no scheds will be made or maintained, but an attempt will be made to activate each island. Any maritime mobile working will be using the callsign VK2GJH/mm. Six metre calls will commence on 50, 110 MHz.

Hopefully, there will be some winter Es to allow contacts back to VK and ZL - the vertical antenna may or may not assist, depending upon the mode of propagation and general conditions.

QSL via Mr Jack D Haden, PO Box 299, Ryde NSW 2112. Return postage required for a QSL, and no cards through the Bureau please.

Overseas

Chris Gare G3WOS, Chairman of the UK Six Metre Group, sent a press release on 20/3 stating that the UKSMG has been in communication with Ezzat Ramadan, SU1ER, President of the Radio Amateurs Assembly of the Radio Club of Egypt, in Cairo, on the basis of encouraging six metre activity from Egypt during their summer.

Ezzat already has ten watts on 50 MHz and

the UKSMG will assist in procuring a 100 watt amplifier. Ezzat's house is 140 metres above sea level, and the building is 25 metres high with a Rohn tower 6 metres in height, therefore the total height will be 170 metres above sea level or 30 metres above the ground, so there should be a good take-off for 6 m.

Band 1 TV activity continues in Egypt and there is a 48 MHz TV transmitter north-west of Cairo so it is not possible to say what problems will eventuate.

The above is mentioned in these columns to inform DXers that this will be a new six metre country. VKs should make a note of possible Egyptian activity when Cycle 23 becomes alive.

The UKSMG Web site for further information is www.uksmg.org/egypt.htm and g3wos@uksmg.org is the e-mail address of Chris G3WOS.

Geoff G4JCD sent news from *Ham Radio Today (HRT)* as follows:

Uganda on 144 MHz EME

On 11/3 history was made by 5X1D as he completed the first 144 MHz EME QSO with Dave W5UN. Gus (5X1D) only has one 17 element Boomer and 300 watts out. At present stations can only be worked when the moon is near the horizon. Scheds can be made via email to: jageror@wfp.or.ug

Microwave News

A new UK 24 GHz record of 391 km between G4KGC and PA0EZ. **Charlie Suckling G3WDG** reports in HRT:

"An interesting 24 GHz QSO took place on 14/1/97. Following a phone call from Arie Dogterom PA0EZ, asking to check the 391 km path between IO92RG and JO22OF. We heard signals both ways and G4KGC and PA0EZ made the QSO at 0935.

"An hour later, after rushing home from work, G3WDG also made the contact and signals remained audible for a long time. Previous openings on 24 GHz from our station to the east coast to G3LQR and G4DDK were always very short lived. We have tried the path to PA0EZ several times when 10 GHz signals were extremely strong (more than 40 dB out of the noise) and 24 GHz never worked to the Netherlands during previous tropo ducting.

"We are not sure what made this QSO work - a combination of tropo ducting, relatively low humidity over land and a warm front - detailed weather information would perhaps be the key to predicting future openings. Temperature at ground level seems not to be a great issue, the temperature during the first QSO was slightly below freezing and then warmed to 9 degrees C when signals were still unchanged.

"Equipment at our end was a WDG009/DB6NT Mk 2 transverter with a PA and LNA feeding a 10 inch offset dish. System NF is about 4 dB and power output is 400 mW into the dish. Thanks to Peter G3PHO for the information."

Another World Record

"On 12/3/1997, a new world record for EME on 10 GHz; was set in a QSO between Joe DJ7FJ and Greg ZL1GSG at 0830. DF7FJ operated from Schiltach in south western Germany and ZL1GSG from Ahwhitu Peninsula/Manukau Heads south west of Auckland, New Zealand. The great circle distance between the QTHs is approximately 18340 km or just under 10000 nautical miles. DF7FJ and his team were using a 4.5 m parabolic dish and a 50 watt travelling wave tube power amplifier, while ZL1GSG used a 3 m dish and a similar PA. "O" reports were exchanged both ways.

"Congratulations to Greg ZL1GSG and Joe DJ7FJ from their New Zealand ground support team of the day, Bill ZL1TTH, Tim ZL3VTV, and Ulrich ZL1DDL. Thanks go to many amateurs who helped with the provision of equipment, time, and a QTH."

News and views please to: Geoff Brown GJ4ICD, Belmont Rd, St Helier, Jersey CI. Tel/fax 01534 877067 or e-mail equinox@itl.net

The VK 5.7 GHz Story

These columns have reported the progress of 5.7 GHz contacts in VK as they have occurred, which has been somewhat piecemeal. Here is a summary of all reportings:

20/10/96 VK6ZAY/6 to VK6ZWZ/6 236.0 km
06/11/96 VK5KK/3 to VK3XPD/3 248.1 km
11/11/96 VK6BHT/6 to VK6ZWZ/6 378.4 km
11/01/97 VK6BHT/6 to VK6ZWZ/6 433.9 km
18/01/97 VK5NC/5 to VK3XPD/3 501.5 km
11/02/97 VK6KZ/6 to VK6BHT/6 379.0 km
12/02/97 VK6BHT/6 to VK6ZWZ/6 544.0 km
16/02/97 VK6BHT/6 to VK6ZWZ/6 614.3 km

For the present, the last named contact is a VK6 and national record. To really put the seal on the record it seems the next logical step is a contact across The Great Australian Bight. Who will be the first?

New Records

John VK3KWA advises the following new records:

1. 144 MHz: New record VK3 and VK6
VK3DEM - VK6KDC 16/01/97 2862.2 km
2. 432 MHz: VK2 record: Distance correction
VK2ZAB - ZL1AKW 13/01/88 2305.1 km

3. 432 MHz: New VK3, VK6 and national record
VK3DEM - VK6KDC 16/01/97 2862.2 km
4. 5.7 GHz: New VK6 and national record
VK6BHT/6 - VK6ZWZ/6 16/02/97 614.3 km

From the USA

Emil W3EP, in QST's The World Above 50 MHz for May, said that winter finally hit in February resulting in relatively sparse activity. "The lone 6 metre sporadic-E report came from Larry Lambert, ND8LL (EM09), who reported that Florida stations were working into his area of Kansas on 25 February around 1845 UTC.

"There was also an unusual early season duct between California and Hawaii. K6QXY (CM88) copied the 144 and 432 MHz KH6HME beacons on 17 February after 1600. The next day, K7JA (DM03) worked KH6HME (BK29) on 144.2 MHz around 2350.

"The only other news was the unexpected aurora and trans-equatorial opening over 17-18 February. The K index was as high as seven during the brief geomagnetic storm that evening. Stations as far south as a line from Virginia west to Kansas and on to Washington state reported good conditions on 50 and 144 MHz between 2300 and 0230.

"Trans-equatorial (TE) propagation often accompanies auroral conditions, and KP4ET and WP4O (FK68) are in a prime location to work TE and had little trouble running a string of stations in Argentina and Uruguay on 50 MHz just about the time the aurora was in session. WP4O also found PY5CC. Stations from Florida to southern California are often able to work into TE propagation, but there were no reports from the mainland this time."

Sporadic-E and FAI Programs

"Jim Roop K9SE, has announced the latest versions of his DOS-based SE-PROP and FLD-ALGN programs for plotting VHF paths via sporadic E, field-aligned irregularities (FAI), and aurora. Both programs now include maps for use virtually anywhere in the world. Windows versions of both programs will be available soon.

"SE-PROP has a number of interesting features, including MUF calculations and path prediction at any frequency based on a single known sporadic-E contact. It can also plot more complicated double-hop paths. FLD-ALGN displays the possibilities for FAI propagation based on a known active sporadic-E centre, among other features. In aurora mode, FLD-ALGN plots the region of possible aurora-scatter contacts based on the current geomagnetic K index and station location. Both programs can be downloaded

from Jim's Web page at <http://www.netcom.com/~wb9qiu>"

Trans-equatorial Propagation

Openings on six metres via the TEP mode were noted around the world during March. The Internet Six News from Geoff GJ4ICD provides the best summary of events as follows:

2/3/97: JA to VK4 opening: 0312 46.170 VK4 TVQ-0 S7, 0442 VK4JH 5x9, 0452 VK4BKM 5x9, 0459 VK4FNG 5x8, 0500 VK4WTN 5x5. ... de JA3EGE.

2/3: VK4 Ch 0 TV 46.17 video was strongly heard unusually late at 0730-0845 yesterday (1/3), but no success into VK4. 46.17 video appeared early at 0330 today (2/3) and JH1WHS (PM95) Yutaka worked VK4JH Joe at 0432 for the first time this year. JA1RJU (PM95) worked VK4BKM and VK4FNG at 0434-0440. JA1VOK (QM05) exchanged 5x9 reports with VK4BKM, VK4FNG and VK4JH and heard VK4BRG/b at 0436-0503, also 46.24 VK2 Ch 0 TV video at 0549 and 45.25 and 45.26 ZL Ch 1 TV video during the opening. JA5CMO (PM63) heard ZL Ch 1 TV sound on 50 MHz at 0530 for the first time this year after working two VK4s. JA6TEW (PM53) worked five VK4s at 0504-0606. VK4JH is believed to have worked into at least JA1/2/3/5/6/7/0 between 0432 and 0610. ... de JA1VOK.

John VK4FNG from Townsville reports the opening in this manner: "2/3: 0430 BYTV. From 0442 to 0511 the following were worked, most at 5x9: JA1VOK, JA3JTG, JF2HEV, JI2HCD, 7L2KO, JA0GSO, JN3PYQ/I, JH1WHS, JA1AUD, JK1D7O/I, JA2TKO, JI2EVL, JA2POK, JE4JFP, JL6FPH, JA6TEW, JF4FH, JH6RRR, JI4WHO, JO6MEH and JR4XME. Heard JAs calling on 50.110 for another 15 minutes or so and BYTV faded soon after. Other stations heard working JAs were VK4JH, VK4BKM and VK4TL (Atherton)."

15/3: TEP JA-VK from JA3EGE: 0430 TVQ-0 video 46.170 S7, 0519 VK4JH 5x7, 0539 VK4WDM 4x3, 0545 VK4AR 5x5, 0557 VK4JSR 5x9, 0603 VK4GM 5x9 and 0611 VK6YBQ 5x9 - first opening JA to VK6 for 1997.

15/3: JA1VOK reports on TEP: "The 46.17 VK4 Ch 0 TV video appeared at 0353 this afternoon and quickly went to S9+. No VKs heard here, but JA3JTG (PM75) picked up VK4JH at 0524. Then VK4AR, 4EK, 4GM, 4DMI, 4JSR, 4WDM and VK6YBQ (OG86) were worked in JA1-6/0 area until 0630. VK6YBQ was worked as the first VK6 this year. I (QM05) exchanged 5x9 reports with VK4DMI/4JSR at 0603-0607. JA3JTG heard

two VK4 beacons and VK8RAS/b at 0530, but I heard VK8RAS/b 539-599 at 0600-0700 for the first time."

Scott VK4JSR refers to the opening on 15/3: "I worked the following JA stations via TEP, all contacts were SSB with signals 5x9: 0558 JA3EGE, 0559 JH0MHE, 0600 JA1RJU, 0601 JF2HEV, 0602 JH1IYD, 0603 JG2AJK, 0603 JK1DVK, 0604 JA1HEE, 0605 JA9IPF, 0607 JA1VOK, 0607 JH1PCS, 0608 JF2GWS, 0609 JH1ZKO, 0610 JA1VUT, 0611 JA1WUN, 0612 JA3JTG."

16/3: TEP update: JA1RJU worked VK4JH on 50.114 at 0544, JA1RJU worked VK4BKM on 50.130 at 0529. ... de VK3OT.

16/3: TEP into PY. Ed WP4O reported: "Weak TEP at 0015 into PY. It is interesting to note that TEP was produced in both JA/VK and PY/KP4 on the same day; what happened to EU/7Q/V51, were we not monitoring? Also, LU2EGQ reported hearing two stations in WP4 via TEP between 0027 and 0037."

23/3: VK TEP report: 0407 Vladivostok TV video on 49.759 MHz S2, last heard at 0550. ... de Scott VK4JSR.

26/3: V51VHF/b on 50.018 heard 529-579 at 1500 for first TEP opening to Italy for 1997. No South African stations were on the band. ... de Sergio IK0FTA.

27/3: 4X TEP opening: At 14.00 a very strong but short opening to V51 land! The V51VHF beacon was 59+ and after approximately 15 minutes faded away. Unfortunately, no stations were heard on six metres. We are still monitoring for further openings. This is the first TEP opening this year (as far as I know, talked also with 4X1IF). ... de Chris 4Z5JA.

It is interesting to note the world wide availability of TEP contacts in March 1997. A hint of better things to come? Because six metres has been available to VKs and JAs for many years, the TEP path between the two areas is legendary. However, it is now becoming obvious that those previously largely unexplored paths south from Europe to Africa and the USA to South America are possible. Best time for afternoon type TEP is from about 1200 to 1700 local time.

Closure

Apart from the TEP openings to Japan, the equinox has been relatively quiet. So also the higher bands. Everyone must be concentrating on 10 and 24 GHz!

Closing with two thoughts for the month: 1. Whenever man begins to doubt himself, he does something so stupid that he is reassured, and

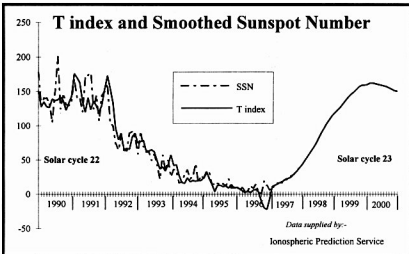
2. An argument is the longest distance between two points of view.

73 from The Voice by the Lake

*PO Box 169, Meningie SA 5264

Ionospheric Update

Evan Jarman VK3ANI*



Solar Activity

Solar activity was predominantly at very low levels throughout the first quarter of 1997. Solar cycle 23 is now affecting activity. Observers are currently trying to work out when this turn around occurred. Early estimations point to around June last year. A cursory examination of the trend in the graphs of the daily T index over the this, and the last two updates (*Amateur Radio* November 1996, page 49 and February 1997, page 51), show a definite U turn in activity.

Ionospheric Activity

There were some depressions in ionospheric conditions during the first quarter of 1997. These occurred around the periods of higher geomagnetic activity. The most severe were on 11, 27 and 29 January followed by 18 February. Maximum useable frequencies at these times were depressed by between 15% and 30%. On 10-12 February spread F was also observed in some southern regions of Australia.

Geomagnetic Activity

There were several geomagnetic disturbances during the first two months of the year.

Two geomagnetic storm periods were reported on 10-11 January and 27-28 January when the Learmonth A index reached 26 and 27 respectively. In February the Ionospheric Prediction Service reported several geomagnetic disturbances. These disturbances could be grouped into three periods, 8-11 February, 16-17 February and 27-28 February. The largest disturbance was observed on 28

February when the Learmonth A index reached 26. March, by comparison, was quiet to unsettled.

T index

The Ionospheric Prediction Service revised the T index values in February. The new values are graphed. Predicted values have not changed. Only past values have been altered, particularly around the end of last year. A negative range has been added to the graph which shows how poor conditions were.

The monthly average T index in the graph of ionospheric indices is now increasing. This reinforces the feeling that the turn around in ionospheric activity is now underway.

Geomagnetic Indices

The ionospheric update includes the Learmonth A index, which is provided by the Ionospheric Prediction Service. This index does not appear in textbooks that amateurs use, although the A index does. To prevent any misunderstanding, an explanation of this index, provided by the Ionospheric Prediction Service is included:-

[The geomagnetic] K indices are a measure of disturbance to the earth's magnetic field. Values are determined for three-hourly intervals and fall in the range 0 (quiet) to 9 (extremely disturbed).

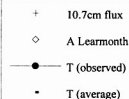
The A index is calculated from three-hourly K index values and represents an overall magnetic activity index for a particular day. Although magnetic activity is

Ionospheric indices

January to March 1997

T index (right side scale)

Solar flux & A index (left side scale)



Data supplied by:-

Ionospheric Prediction Service

a global phenomena, there are some differences between locations on earth. An A index can be defined for any magnetic observatory and will indicate activity for its region. The index from the Fredericksburg observatory in the USA is often [used] as a standard. The planetary index, Ap, gives a better guide to the world-wide level of

disturbance while local Australian indices from Learmonth are more appropriate for Australia.

The K index is a more immediate measure of geomagnetic activity. Three observatories, Canberra, Mundaring and Learmonth, provide the index. It is not presented here as the graph of ionospheric indices is a historical

reference.

Geomagnetic conditions and their corresponding ranges in the A index are: 0-7 (quiet), 8-15 (unsettled), 16-24 (active), 25-35 (minor storms) and above 36 (major storms).

*C/o PO Box 2175, Caulfield Junction VIC 3161

ar

Silent Keys

Due to space demands obituaries should be no longer than 200 words.

The WIA regrets to announce the recent passing of:-

DE	MACPHERSON	L21014
AH (Adrian)	CHRISTY	VK2ACY
A	HARRIS	VK2FFH
FA (Fred)	HULL	VK6FH

Fred Hull VK6FH

It is with regret that we record the death of Frederick Atherley Hull on 27 January 1997 after coping courageously with a terminal illness.

Fred was born in Wellington, New Zealand on 12 October 1906. When he was about three years old his family, originally from New South Wales, moved back to Sydney where he received his schooling. The family moved to a farm at Pingrup in WA. Fred and his brother, Ray, who later became VK6RH, were both interested in wireless and in 1928 Fred left the farm and enrolled in Sydney with the Marconi School of Wireless. He qualified for a Commercial Operator's Certificate and joined the Institute of Radio Engineers. On his return to Western Australia he gained the AOC and received the call sign VK6FH which he held until he died.

In 1930 the Japanese ship "Shunsie Maru" ran aground off Point Cloates near North

West Cape in WA and Fred was the radio operator on the salvage ship which towed the damaged ship to Surabaya.

When the first WA base of the Royal Flying Doctor Service was opened in Port Hedland in 1934 he was appointed as radio operator. These were the early days of Pedal Radio and School Of the Air and Fred's friendly voice became familiar to hundreds of outback people in the North West.

In 1937 Fred married Irene and they raised a family of two girls and a boy.

Fred was with the RFDS in Port Hedland until 1955, except for a break of four years in the RAAF. He studied the new techniques of Radar and in January 1942, with others, helped set up the first early warning system in Australia near Newcastle. In February 1942 he was involved in getting operational the AWS station at Darwin just after the first Japanese air raid and, in a short time, was placed in charge. Subsequently he was sent to set up the first operational AWS at Merauke in New Guinea. By the time he was discharged he held the rank of acting Squadron Leader.

At the end of the war Fred returned to Port Hedland. In 1955 he was appointed technical

and liaison officer for the RFDS in Perth and in 1967 became Managing Secretary for WA which position he held until retirement at the age of 70. He still maintained ties with RFDS on various Committees until failing health in the last few years curtailed this activity.

Fred was a member of the WIA and active in WICEN. He was awarded Amateur of the Year in WA in 1986. He was a foundation member of the AARTG (now called WAADCA). For many years he re-broadcast the ANARTS Sunday RTTY news. His efforts were recognised by the granting of life membership of WAADCA and the naming of a packet digipeater station VK6RFH at Wireless Hill. He was also active on the steering committee to establish the Telecommunications Museum at Wireless Hill. Despite his terminal illness, which extended for nine years, he maintained active interest in digital communications until a couple of months prior to his passing at the age of 90 years.

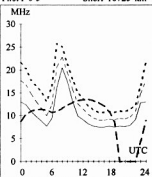
Fred's many amateur radio friends join in expressing their condolences to Fred's wife Rene and his family.

Frank Taylor VK6JK and Patricia Dicks VK6QL

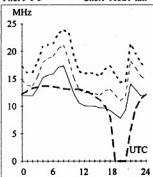
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Adelaide-Dakar 233

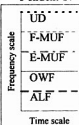
First F 0-5 Short 16725 km

**Brisbane-Berne** 315

First F 0-5 Short 16321 km

**HF Predictions**

Evan Jarman VK3ANI

T Index: 17

These graphs show the predicted diurnal variation of key frequencies for the nominated circuits. This also indicates a possibility of communication (percentage).

The frequencies, identified in the legend, are:-
Upper Decile (F-layer, 10%)

F-layer Maximum Useable Frequency (50%)

E-layer Maximum Useable Frequency

Optimum Working Frequency (F-layer, 90%)

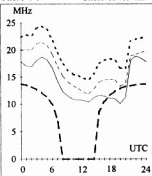
Absorption Limiting Frequency

The predictions were made with the Ionospheric Prediction Service program, ASAPS V3.2. The T index used is shown above the legend. The Australian terminal azimuth, path and propagation mode are also given for each circuit.

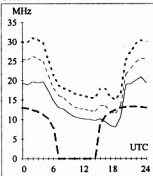
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Adelaide-Seattle 51

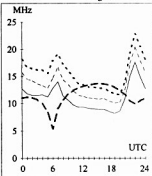
First F 0-5 Short 13413 km

**Brisbane-Los Angeles** 59

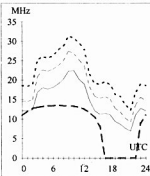
Second 4F3-6 4E0 Short 11563 km

**Canberra-London** 136

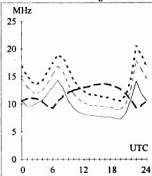
First F 0-5 Long 23042 km

**Darwin-Cairo** 298

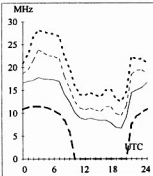
Second 4F2-7 4E0 Short 11609 km

**Adelaide-Stockholm** 142

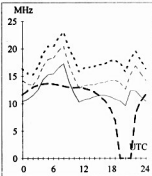
First F 0-5 Long 25030 km

**Brisbane-Osaka** 344

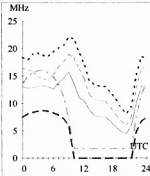
Second 3F6-10 3E0 Short 7149 km

**Canberra-London** 316

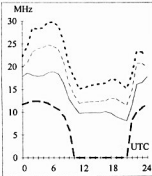
First F 0-5 Short 16982 km

**Darwin-Manila** 340

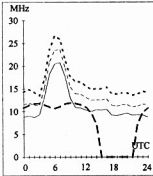
Second 2F12-21 2E2 Short 3198 km

**Adelaide-Tokyo** 1

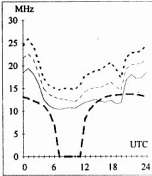
Second 3F4-8 3E0 Short 7855 km

**Brisbane-Pretoria** 230

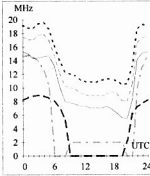
Second 4F2-3 4E0 Short 11657 km

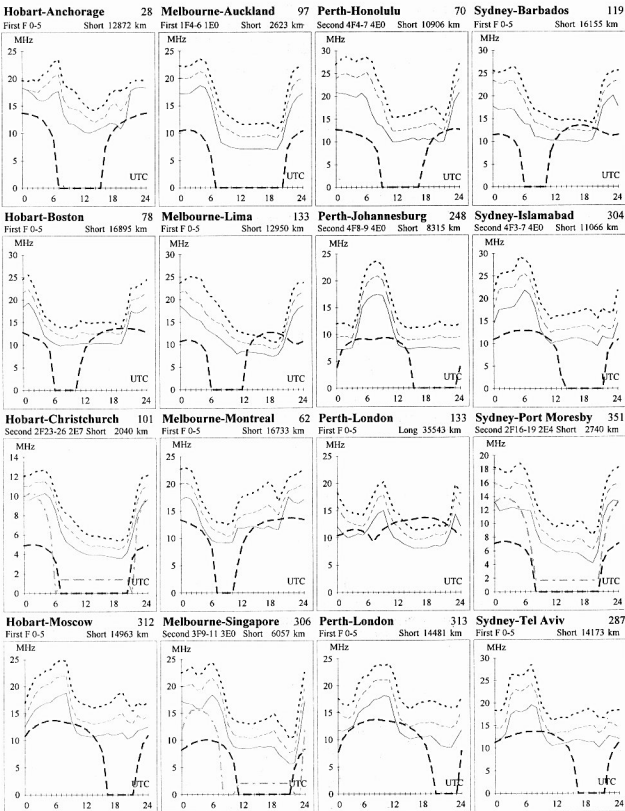
**Canberra-Washington** 70

First F 0-5 Short 15939 km

**Darwin-Wellington** 135

Second 3F11-13 3E1 Short 5321 km





HAMADS

- Hamads may be submitted on the form on the reverse side of the *Amateur Radio* address flysheet. Please use your latest flysheet where possible.
- Please submit separate forms for **For Sale** and **Wanted** items, and be sure to include your name, address and telephone number (including STD code) if you do not use the form on the back of the *Amateur Radio* address flysheet.
- Eight lines (forty words) per issue free to all WIA members, ninth and tenth lines for name and address. Commercial rates apply for non-members.
- Deceased estates Hamads will be published in full, even if the ad is not fully radio equipment.
- WIA policy recommends that the serial number of all equipment offered for sale should be included in the Hamad.
- QTHR means the address is correct in the current WIA Call Book.
- Ordinary Hamads from members who are deemed to be in general electronics retail and wholesale distributive trades should be certified as referring only to private articles not being re-sold for merchandising purposes.
- Commercial advertising (Trade Hamads) are pre-payable at \$25.00 for four lines (twenty words), plus \$2.25 per line (or part thereof), with a minimum charge of \$25.00. Cheques are to be made out to: WIA Hamads.
- Copy should be typed or in block letters, and be received by the deadlines shown on page 1 of each issue of *Amateur Radio*, at:

Postal: 3 Tamar Court, Mentone VIC 3194
 Fax: (03) 9584 8928
 E-mail: vk3br@c031.aone.net.au

TRADE ADS

- **AMIDON FERROMAGNETIC CORES:** For all RF applications. Send business size SASE for data/price to RJ & US Imports, PO Box 431, Kiama NSW 2533 (no enquiries at office please ... 14 Boany Ave Kiama). Agencies at: Webb Electronics, Albury; Assoc TV Service, Hobart; Truscotts Electronic World, Melbourne and Mildura; Alpha Tango Products, Perth; Haven Electronics, Nowra; and WIA Equipment Supplies, Adelaide.
- **WEATHER FAX programs** for IBM XT/ATs *** "RADFAX2" \$35.00, is a high resolution shortwave weatherfax, Morse and RTTY receiving program. Suitable for CGA, EGA, VGA and Hercules cards (state which). Needs SSB HF radio and RADFAX decoder. *** "SATFAX" \$45.00, is a NOAA, Meteor and GMS weather satellite picture receiving program. Needs EGA or VGA & WEATHER FAX PC card, + 137 MHz Receiver. *** "MAXISAT" \$75.00 is similar to SATFAX but needs 2 MB of expanded memory (EMS 3.6 or 4.0) and 1024 x 768 SVGA card. All programs are on 5.25" or 3.5" disks (state which) plus documentation, add \$3.00 postage. ONLY from M Delahunty, 42 Villiers St, New Farm QLD 4005. Ph 07 358 2785.
- **HAM LOG v3.1** - Acclaimed internationally as the best IBM logging program. Review samples....AR: "Recommend it to anyone";

The Canadian Amateur: "Beyond this reviewer's ability to do it justice. I cannot find anything to improve on. A breakthrough of computer technology". ARA: "Brilliant". Simple to use with full help, the professional HAM LOG is immensely popular (now in its 5th year), with many useful, superb features. Just \$59 (+ \$5 P & P), with a 90 page manual. Special 5 hour Internet offer. Demos, brochures available. Robin Gandevia VK2VN 02 369 3069. Internet address rhg@ozemail.com.au.

• **Marconi Signal Generator CT452A**, 10kHz to 70 MHz, \$110. **AVO Signal Generator**, 2 MHz to 100 MHz, \$75. **Receiver-Exciter RT662/GRC106**, \$380. D Dauner Electronics, 51 Georges Crescent, Georges Hall NSW 2198, Tel 02 9724 6982, Fax 02 9725 7850.

FOR SALE NSW

Yaesu FT-101Z, no mods, hand mike, manual, good condn, \$500. **Heathkit SB-100** with power supply, mike, manual, as is, \$300. **HCR-62** comm receiver, as is, \$50. **VK2YU**, QTHR, 045 677 483.

Kenwood TS-680S; **AT-230** tuner; **MC60** desk mic; **IC-02A** hand held; **Com-ant-ena multi-band vertical**; cartons, manuals, very good condn, \$1500 the lot. Rod VK2BRW, QTHR, 07 5524 3722.

Dick Smith VK Power Master power supply,

20 amp at 13.8 volts, assembled and working kit, \$180 ONO. **VK2BZE**, work phone 042 264 499 BH only.

Deceased Estate: Kenwood TS-430S, \$950. **PS-430** power supply, \$400. **AT-200** antenna tuner. **SP-280** speaker, \$100. **SM-220** station monitor, \$300. **Kenwood TS-120S**, \$450. **AT-130** antenna tuner. **SP-120** speaker, \$75. **Kenwood TM-201A** 2 metre, \$325. **Kenwood TR-8400** UHF, \$400. **Alinco DR-110T**, 2 metre, \$250. **Kenwood R-1000** receiver, \$300. And accessories. Licenced amateurs only. John VK2FUR, QTHR, 046 251 812.

DG5 digital readout for Kenwood TS-520S, s/n 730409, all leads, never been used since overhaul by Delta Base Comms, \$75, p&p free. **Bernie VK2JB**, 068 921 302 anytime.

Two of **HP Vectra 286 PCs**, EGA screens, 20 Mb HDDs, 4 x FDDs each, 2 x **HPIB Thinkjet** printers, mice, keyboards, books, \$45 each. **Honeywell XT PC**, keyboard, amber screen, no HDD, \$20. John VK2WW, 02 9546 1927.

Kenwood TS-430 txcvr, manual. **Kenwood AT-200** antenna tuner, heavy duty power supply 25 amps plus, \$1000 ONO. Peter VK2AGB, QTHR, 042 948 423 AH, 02 9583 1046 Mon, Wed, Fri BH.

TET HB33SP three element tri-band beam, **KR400RC** rotator and controller, \$450 or exchange for HF6V or 5BTV vertical. Two section galv pipe mast with winch, \$100. Alf VK2API, 044 715 772.

Kenwood TS-870S txcvr plus **PS-53** PSU, \$3700. **TS-440SAT** txcvr, \$1350. **AEAAT-300** ATU, \$150. **VGC**, ONO. Laurie VK2II, QTHR, 02 9999 3993.

Special. **Yaesu FT-101E**, complete, excellent running order, s/n 4J319365, \$200. Bob VK2GZ, 434 George Bass Drive, Malva Bay NSW 2536.

FOR SALE VIC

Entire station. Kenwood TS-120S, PSU, ATU, all cables, mike, Morse key; **Icom IC-2A** plus two batteries, charger, 12 V converter for car; **Yaesu mobile antenna set**; various bits including plugs and cables. Most items in original packing with manuals. Jean VK3DJM, QTHR, 03 9484 6361.

Yaesu FT-10R, 2 m FM handheld, s/n 6F08 0220, brand new (came as a bonus), \$300. Jim VK3DBQ, QTHR, 03 9811 9427 BH, 03 9467 1253 AH.

Hi-Ace camper van, suit the mobile ham, fully furnished, four antenna outlets, two batteries and wiring for comms equipment. Wal VK3WD, QTHR, 03 5435 2274.

Kenwood TM-241A mobile rig, s/n 42100431,

with **Brainer F23A** 5/8 wavelength vertical base antenna, Diamond mobile antenna, aluminium carry cradle for portable or home-base set-up, excellent condn, boxed, sales dockets available, \$500. **Kent Morse key**, solid brass, \$85. **Jag VK3AAC**, 03 5127 3905.

FL-2100Z linear amplifier, s/n SD10025, \$600. **FT-290R** with mobile mounting bracket and nicads, s/n SE270921, \$350. Instruction manuals for both. **Jim Payne VK3AZT**, 03 5427 2113.

Kenwood TS-700SP 2 m all mode txcvr, complete with external VFO, \$650. **Icom IC-730 HF txcvr**, \$600. Both units in good working condn. **Damien VK3RX**, 03 5427 3121.

Kenwood TS-870 HF txcvr, s/n 80300020, with hand-held mic, in very good condn, \$3100. **Kenwood PS-52** 20 A PSU, s/n 50700115, VGC, like new, \$460. **Jim VK3NR**, 03 9367 6920.

Kenwood TS-930S HF txcvr, 160-10 m, auto ATU built-in, IRC switchable narrow SSB filtering professionally installed, Shure 444 desk mic, users handbook and workshop manual, spotless as new condn, \$1445 ONO. **Bill VK3BR**, QTHR, 03 9584 9512.

FOR SALE QLD

Kenwood TS-530S, s/n 1121004; **MC-35S** mic; **MC-50** mic; **Datong AS processor**, 0-30 dB, s/n 2147/A; **MFJ941** tuner; **SX3** pre-selector; **Archer** high power low pass filter; **EP-2000 SWR meter**; **Auto rotator**; **EB-31 tri-band dipole**, 10-15- 20 m; **Clipsal 10 A power line filter**. Only licensed hams to apply. **H Cox VK4OX**, QTHR, 07 5497 5308.

Yaesu FT-747GX with FM board, s/n 9M250558, original box, manual, \$800. **MFJ-949D Versa Tuner**, SWR meter, dummy load and 4:1 balun with manual, \$200. **Steve VK4EMS**, QTHR, 07 3261 3693.

Rohde & Schwarz signal generator SMS 302.4012.25, 0.1 to 520 MHz, AM/FM, digital readout of frequency, modulation, output level set by up/down buttons and keypad, three memories, hi-stability ref osc, precision instrument, \$650. **Hewlett Packard HP1740A CRO**, 100 MHz, dual channel, delayed/dual time-base, \$790. **Bird Termline Model 6154** power meter/dummy load, 25 to 1000 MHz, 150 W in four ranges, N type connector, \$250. **Marconi TF2002AS** signal generator, 10 kHz to 72 MHz, AM/FM, int Xtal calibrator, large dial, two meters for output and modulation, output stepped attenuator, \$120. **K&L tunable band-pass filter**, 125 to 250 MHz, five section filter, calibrated vernier dial, N type connectors for in and out, 50 ohm, 50 W, \$990. **Andrew's coax connectors 44ASW** N type male, suit FSJ4-50B superflexible cable, \$15 each. **Gary VK4AR**, QTHR, 07 3353 1695.

FOR SALE SA

Icom IC-W21A 2 m/70 cm dual-band hand-held with extended Rx 50-1000 MHz, AC charger, cig lighter adapter, antenna, BP130 and BP157 battery packs, belt clip, s/n 01642,

immaculate condn in original carton, \$450 ONO. **Hi-Mound HK-708** Morse key, as new, never used, \$35. **John VK5KBE**, 08 8250 7259. **Kenwood TR-2400** 2 m hand-held, s/n 0115168, complete with base stand, mains charger, Shure hand-held mic to match; **Dick Smith K-6313** 2 m 100 W linear amp, 12 V 15 A mains power supply, \$450 the lot. Will separate. **VK5JI**, QTHR, 08 8295 8094.

FOR SALE WA

Kenwood TS-130S HF txcvr, good condn with manual, s/n 1091546, \$550. **Geoff VK6AT**, 09 581 4596.

FOR SALE TAS

Tono MR-150W 2 m all-mode linear amp with pre-amp, mint condn, s/n 358157, \$450. **President HR-2510**, early model, perfect condn with mobile bracket and book, \$350. **David VK7ZDJ**, QTHR, 03 6425 2030 evenings only, or 0411 084 491.

Racal RA17L receiver with spare valves and workshop manual, \$300. **Nippon R5000 antenna rotator**, suit 2 m/6 m, as new, \$100. **Waters phone patch unit**, Model 3001, \$70. **VK7BC**, QTHR.

WANTED NSW

Military equipment, radio set, any condn, AN/GRC-106, 109, 129 or similar. Also AN/PRC-25, 47, 74 or ex S4S rig. **Pascal VK2IHL**, QTHR, 0419 323 232, e-mail drcod@onastralia.com.au

Manuals for Marconi TF2006, TF2008 signal generators; HP3406, HP3467A voltmeters; HP1615A logic analyser manual and data probes; Tektronix 575 transistor curve tracer. Also interested in other old equipment manuals and old test equipment catalogues. Please don't throw them away! **Gary Edwards VK2ATW**, 068 472 491 BH.

WANTED QLD

Tetrode Tx valves 4-400, 4-1000, 5-500 or similar. **RCA receiving tube manual RC28 1971/2**, name your price. **WE205** valve and suitable base (working). **Peter Hadgraft**, 17 Paxton St, Holland Park QLD 4121, 07 3397 3751.

WANTED WA

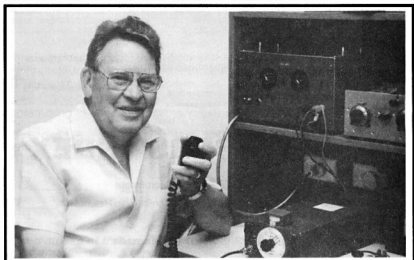
Copy of handbook/manual (or photocopy) for **JIL scanner Rx**, model SX200. Happy to meet expenses. **Beau VK6COP**, QTHR, 09 457 8179. **Circuit diagram and handbook for FTDX100**. I will pay for copy and postage to PO Box 88 Yarloop, WA 6218. **Con Murphy VK6PM**, QTHR, 097 334 224.

MISCELLANEOUS

• THE WIA QSL Collection (now Federal) requires QSLs. All types welcome especially rare DX pictorial cards special issue. Please contact Hon Curator **Ken Matchett VK3TL**, 4 Sunrise Hill Road, Montrose Vic 3765, Tel (03) 9728 5350.

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An Amateur and His Station Peter VK5APS



Peter Spencer VK5APS with his homebuilt 80 m SSB/CW transceiver built from **Drew Diamond's** article in October 1994 *Amateur Radio*.

(Photo by **Jeff Wallace VK5BJF**)

(An Amateur and His Station is an intermittently published segment. We are always looking for photos for this segment, preferably colour or black and white prints)

WIA Divisions

The WIA consists of seven autonomous State Divisions. Each member of the WIA is a member of a Division, usually in their residential State or Territory, and each Division looks after amateur radio affairs within its area.

Division	Address	Officers		Weekly News Broadcasts		1997 Fees
VK1	ACT Division GPO Box 600 Canberra ACT 2601	President Secretary Treasurer	Hugh Bleimings John Woolner Les Davey	VK1YYZ VK1ET VK1LD	3.570 MHz LSB, 146.950 MHz FM each Sunday evening commencing at 8.00 pm local time. The broadcast text is available on packet, on Internet ausd.amateur.misc newsgroup, and on the VK1 Home Page http://email.nla.gov.au/~crsakin/wiaact.html	(F) \$72.00 (G) (S) \$58.00 (X) \$44.00
VK2	NSW Division 109 Wigram St Parramatta NSW (PO Box 1066 Parramatta 2124 Phone 02 9689 2417 Freecall 1800 817 644 Fax 02 9633 1525	President Secretary Treasurer (Office hours	Peter Jensen Eric Fossey Eric Van De Weyer Mon-Fri 11.00-14.00 Sat 1000-1300 Mon 1900-2100)	VK2AQJ VK2EFY VK2KUR	From VK2WU 1.845, 3.595, 7.146*, 10.125, 24.950, 28.320, 29.120, 52.120, 52.525, 144.150, 147.000, 438.525, 1281.750 (* morning only) with relays to some of 14.160, 18.120, 21.170, 584.750 ATV sound. Many country regions relay on 2 m or 70 cm repeaters. Sunday 1000 and 1930. Highlights included in VK2AWX Newcastle news, Monday 1930 on 3.593 plus 10 m, 2 m, 70 cm, 23 cm. The broadcast text is available on the Internet newsgroup ausd.amateur.misc , and on packet radio.	(F) \$66.75 (G) (S) \$53.40 (X) \$38.75
VK3	Victorian Division 40G Victory Boulevard Ashburton Vic 3147 Phone 03 9885 9261 Fax 03 9885 9298	President Secretary Treasurer (Office hours	Jim Jinton Barry Willton Rob Haley Tue & Thur 0830-1530)	VK3PC VK3XV VK3NC	VK38WI broadcasts on the 1st Sunday of the month, starts 10.30 am. Primary frequencies 1.840 AM, 3.615 LSB, 7.085 LSB, and FM/RJs 146.700 Mt Dandenong, 147.250 Mt Macedon, 147.225 Mt Baw Baw, and 2 m FM/RJs VK3RMA, VK3RSH and VK3ROW. 70 cm FM/RJs VK3ROU and VK3RGL. Major news under call VK3WU on Victorian packet BBS.	(F) \$75.00 (G) (S) \$61.00 (X) \$47.00
VK4	Queensland Division GPO Box 638 Brisbane QLD 4001 Phone 074 96 4714	President Secretary Treasurer e-mail address:	Geoff Sanders John Stevens John Prescott wiaq@tmbris.mhs.qz.au	VK4KEL VK4AFS VK4WX	1.825 MHz SSB, 3.605 MHz SSB, 7.118 MHz SSB, 14.342 MHz SSB, 28.400 MHz SSB, 29.220 MHz FM, 52.525 MHz FM, 146.700 MHz FM, 147.000 MHz FM, 438.525 MHz (Brisbane only), regional VHF/UHF repeaters at 0900 hrs Sunday. Repeated on 3.605 MHz SSB & 147.000 MHz FM, regional VHF/UHF repeaters at 1930 hrs EAST Monday. Broadcast news in text form on packet under WIAQ@VKNET.	(F) \$74.00 (G) (S) \$60.00 (X) \$46.00
VK5	South Australian Division 34 West Thebarton Rd Thebarton SA 5031 (GPO Box 1234 Adelaide SA 5001) Phone 08 8352 3428 Fax 08 8264 0463	President Secretary Treasurer Web:	Peter Watts Maurie Hooper Charles McEachern http://www.vk5wia.ampr.org/	VK5ZFW VK5EA VK5KDK	1827 kHz AM, 3.550 MHz LSB, 7.095 AM, 14.175 USB, 28.470 USB, 53.100 FM, 147.000 FM Adelaide, 146.700 FM Mid North, 146.800 FM Midura, 146.825 FM Barossa Valley, 146.900 FM South East, 148.925 FM Central North, 147.825 FM Gawler, 438.425 FM Barossa Valley, 438.475 FM Adelaide North, ATV Ch 35 579.250 Adelaide, (NT) 3.555 USB, 7.065 USB, 10.125 USB, 146.700 FM, 0900 hrs Sunday, 3.585 MHz and 146.675 MHz FM Adelaide, 1930 hrs Monday.	(F) \$75.00 (G) (S) \$61.00 (X) \$47.00
VK6	West Australian Division PO Box 10 West Perth WA 6872 Phone 09 351 8873	President Secretary Treasurer	Cliff Bastin Christine Bastin Bruce Hedland-Thomas	VK6LZ VK6ZLZ VK6OO	146.700 FM(R) Perth, at 0930 hrs Sunday, relayed on 1.825, 3.560, 7.075, 14.116, 14.175, 21.185, 29.680 FM, 50.150 and 438.525 MHz. Country relays 3.582, 147.350(R) Busselton and 146.900(R) Mt William (Bunbury). Broadcast repeated on 146.700 at 1900 hrs Sunday, relayed on 1.865, 3.563 and 438.525 MHz; country relays on 146.350 and 146.900 MHz.	(F) \$62.00 (G) (S) \$50.00 (X) \$34.00
VK7	Tasmanian Division PO Box 271 Riverside TAS 7206 Phone 03 6327 2096 Fax 03 6327 1738	President Secretary Treasurer	Ron Churcher Barry Hill Mike Jenner	VK7RN VK7BE VK7FB	146.700 MHz FM (VK7RHT) at 0930 hrs Sunday relayed on 147.000 (VK7RAA), 146.725 (VK7RNE), 146.625 (VK7RMD), 3.570, 7.090, 14.130, 52.100, 144.150 (Hobart) Repeated Tues 3.590 at 1930 hrs.	(F) \$74.00 (G) (S) \$60.00 (X) \$46.00
VK8	(Northern Territory is part of the VK5 Division and relays broadcasts from VK5 as shown received on 14 or 28 MHz).					
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				Full (F) Pension (G) Needy (G) Student (S)		
				Non receipt of AR (X)		
Note: All times are local. All frequencies Mhz.						

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Membership Grades
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